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VI
A CATALOGUE AND HOST LIST OF THE ANOPLURA

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INTRODUCTION

The Anoplura (sucking lice) have long been much neglected and much misunderstood, for as late as 1904 no critical, comparative study of the group had ever been made; and this in spite of the fact that the group had had a place in two monumental works upon parasitic insects, *Insecta Epizoa* of Giebel and *Les Pediculines* of Piaget. With the exception of a few forms of such peculiar nature that they were almost of necessity given generic rank, the species were for the most part lumped under the genus *Hæmatopinus* and all were regarded as forming a single family, the Pediculidæ. In 1904, Enderlein, in a series of "*Lausestudien*" published in the *Zoologischer Anzeiger*, broke up the all-inclusive genus *Hæmatopinus* into several genera and elevated this group, as well as certain other groups, to family rank.

There has been some objection to this procedure, but on the whole it has been amply justified by time. The old classification was based upon lack of knowledge and served only successfully to conceal a wealth of remarkably interesting bio-

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logical facts that the newer classification has revealed and emphasized. The remarkable degree to which these parasites are broken up into natural groups that are strictly confined to closely related groups of hosts, is now clearly evident, while previously it was barely hinted at. The problem of their distribution is shown to be almost exclusively the problem of the genetic relationships of their hosts.

In 1908 there appeared, as a part of Wytzman's *Genera Insectorum*, a catalogue, compiled by Dalla Torre, based upon the work of Enderlein. This catalogue has proved of immense value, but the knowledge of the Anoplura has increased so rapidly since its publication that the additions and corrections have now attained a bulk almost rivaling the original catalogue, and it therefore seems well that a new catalogue should be issued.

These changes and additions may briefly be summarized. Since 1909 nine valid genera have been added to the list and approximately 60 species have been described (the previous catalogue listed 65, the present one lists 120). The position of numerous species then in doubt has since been cleared up and many of the question marks have been removed, this being the case especially with the North American species described by Osborn, almost all of which were then in doubt but have since been cleared up. More significant, perhaps, than the description of new genera and species is the improved standard of work that has been established. The magnificent "Monographie der Robbenläuse" of Enderlein, in the report of the "Deutsche Südpolar Expedition," and the careful and critical work of Fahrenholz, Cummings, and Neumann, form a splendid contrast to the superficial and often inaccurate work that formerly prevailed.

The synonymy of many of the hosts and some of the parasite species is still badly tangled. The hosts have frequently been referred to only by their vernacular names and when the scientific names have been used they have sometimes been inaccurate, added to which the instability of mammal nomenclature has not been conducive to clearness. The synonymy of the North American mammals has in part been worked out from the "List of North American Land Mammals in the United States National Museum" (Miller, 1911), and, in ad-

dition, the authorities of the Museum of Vertebrate Zoology of the University of California have been extremely kind in helping to clear up numerous matters. The synonymy of the European mammals has been worked out from the "Catalogue of the Mammals of Europe" (Miller, 1912). The synonymy of the Primates has been taken from Elliot's "A Review of the Primates" (1912), but it is very probably still far from correct. The synonymy of other species, when not obtainable elsewhere, has been reduced to the basis of Trouessart's "Catalogus Mammalium" (1899), although it has been necessary to do this only in the case of some of the older species. The host names given in the list of Anoplura are as nearly as can be determined the correct ones. In the host list the names in parentheses are regarded as synonyms, the others are correct as far as available information permits. An attempt has been made to list all the host names that have at any time been used.

SYSTEMATIC POSITION OF THE ANOPLURA

Anoplura Leach, Edinburgh Encyclopedia (1817); Enderlein, Zool. Anz., vol. 28, pp. 121-147 (1904); Mjöberg, Ark. f. Zool., vol. 6, pt. 13 (1910); Cummings, An. Mag. Nat. Hist., ser. 8, vol. 15, pp. 256-259 (1915).

Pediculinæ Burmeister, Handbuch d. Ent., vol. 2, p. 52 (1835).

Siphunculata Meinert, Videnskabelige Meddelelser (1896); Cholodkovsky, Zool. Anz., vol. 27, p. 527 (1904).

Pseudorhyncota Cholodkovsky, Zool. Anz., vol. 27, p. 125 (1903).

Lipognatha Börner, Zool. Anz., vol. 27, p. 527 (1904).

Elliptera Shipley, *ibid.*, vol. 27, p. 261 (1904).

The systematic position of the Anoplura has always been a matter of doubt and dispute. Because of their parasitic habits they were for a long time classed with the Mallophaga, but later under the influence of the "biting- or sucking-mouthparts" fetish, the two groups were separated and the Anoplura were placed with the Hemiptera, of which they have for some time been regarded as a suborder most frequently known as Parasita. Their position here has quite generally been re-

garded as rather definitely fixed, but within the last few years evidence has been found which indicates that a readjustment is again desirable.

Handlirsch and Cholodkovsky have favored an arrangement which restores the Anoplura and Mallophaga to a position very similar to that which they originally held in relation to each other, and other authors have brought forward evidence in support of this view. As a result of a comparative study of the two groups Mjöberg has concluded that they are really quite closely related, the Anoplura being merely a further adaptation to a parasitic life, and with this view Kellogg and Cummings are inclined to agree. Enderlein alone, of recent authors, has contended for retaining the Anoplura as a sub-order of Hemiptera. The evidence is too voluminous to be reviewed here, but it indicates very strongly that the Anoplura really have nothing to do with the Hemiptera and are related to the Mallophaga. It seems best to regard the Anoplura as a distinct order and in the latest classification of the Insecta, that of Brues and Melander, this is done. However, the problem of their relationships is still an open question which can only be settled by much more careful comparative morphological studies.

The classification within the order itself is extremely simple; too little is known about the group for the classification to be otherwise. Four families, all of which apparently form quite natural groups, are recognized. Of these, one, *Hæmatomyzidæ*, contains a single remarkable species (with a possible variety) which occurs upon elephants. Another small family, *Echinophthiriidæ*, is limited in its occurrence to marine mammals, its peculiarities being ascribable to adaptation to the aquatic life of the hosts. The *Pediculidæ* include the species found upon man, apes and monkeys, and the remainder of the species are contained in the family *Hæmatopininidæ*.

Nearly as many species have been described since 1908 as had been described previous to that time, but in spite of this activity the study of the group has hardly begun. The host list, when compared with a list of the mammals of the world, is pitifully small, as is instanced by the fact that there are but four records of Anoplura from mammals of the South Ameri-

can region. It is certainly not unsafe to estimate that the number of known species is not more than one-fifth of those that actually exist.

KEY

TO FAMILIES, SUBFAMILIES AND GENERA OF ANOPLURA.

- 1—Body thickly beset with more or less short, stout spines, or with spines and scales. Occurring exclusively on marine mammals. Family ECHINOPHTHIRIDÆ..... 2
 - Body with spines or hairs always in definite rows, never with scales. Occurring exclusively on land mammals 4
- 2—Thorax and abdomen bearing delicate scales. Antennæ four- or five-segmented. Subfamily ANTARCTOPHTHIRINÆ 3
 - Thorax and abdomen without scales. Antennæ four-segmented. Subfamily ECHINOPHTHIRINÆ.. Genus *Echinophthirus*
- 3—Antennæ four-segmented..... Genus *Lepidophthirus*
 Antennæ five-segmented..... Genus *Antarctophthirus*
- 4—Head tubularly produced anteriorly; tibiæ without a thumb-like process opposing the claw. Family HÆMATOMYZIDÆ. One genus, *Hæmatomyzus*, occurring on elephants.
 - Head not so produced; tibiæ with thumb-like process opposing the claw..... 5
- 5—Eyes lacking. Family HÆMATOPINIDÆ..... 9
 - Eyes present, well pigmented. Occurring on man, apes and monkeys. Family PEDICULIDÆ..... 6
- 6—Antennæ distinctly five-segmented, abdomen without pleural plates. Subfamily PEDICULINÆ..... 8
 - Antennæ three-segmented or obscurely five-segmented, abdomen with pleural plates. Subfamily PEDICININÆ 7
- 7—Legs all with slender, pointed claws, abdomen with three pairs of pleural plates..... Genus *Pedicinus*
 - Anterior legs with slenderer claw than the others, abdomen with two pairs of pleural plates..... Genus *Phthirpedicinus*

- 8—Legs all of same size. Genus *Pediculus*
 Anterior legs much smaller than others. . . Genus *Phthirus*
- 9—Antennæ five-segmented. 11
 Antennæ three-segmented. Subfamily EUHÆMATOPININÆ 10
- 10—Posterior legs with stalked, disk-shaped appendages on femur and tibia. Genus *Euhæmatopinus*
 Posterior legs without such appendages.
 Genus *Hæmatopinoïdes*
- 11—Legs and claws all practically of equal size.
 Subfamily ΠÆMATOPININÆ. Genus *Hæmatopinus*
 Anterior legs smaller and with slenderer claw than the posterior pair, at least. Subfamily LINOGNATHINÆ. 12
- 12—Anterior tarsi with two joints. Genus *Hybophthirus*
 Anterior tarsi with but one joint. 13
- 13—Anterior tarsi with a short, claw-like process in addition to the claw. Genus *Scipio*
 Anterior tarsi not so. 14
- 14—Abdomen with well developed pleural plates. 18
 Abdomen entirely without pleural plates. 15
- 15—Abdomen with more than one row of hairs or spines on each segment. Genus *Linognathus*
 Abdomen with but one row of hairs on each segment. . 16
- 16—Gonapods moderately long, behind each gonapod a stout, flat, spine-like process. Genus *Cervophthirus*
 Gonapods very short, no flat, spine-like process behind them. Genus *Hæmodipsus* (in part)
- 18—Anterior pair of legs equal to middle pair, both pairs very small, posterior pair large and stout.
 Genus *Enderleinellus*
 Anterior legs smaller than either middle and posterior legs and with much smaller and more slender claw. 19
- 19—Second or third abdominal sternite with a chitinized plate or area near each lateral margin. Genus *Fahrenholzia*
 Second or third abdominal sternite without such plates 20
- 20—Abdominal segments with but a single transverse row of spines. 21
 Abdominal segments, at least in part, with two or more transverse rows of spines. 22

- 21—Occiput deeply sunk into the thorax, rostrum surrounded by denticles, pleural plates quite large.
 Genus *Eulinognathus*
 Occiput not deeply sunk into the thorax, rostrum not surrounded by denticles, pleural plates minute.
 Genus *Hæmodipsus* (in part)
- 22—Abdominal tergites and sternites with not more than two rows of hairs or spines. 23
 Abdominal tergites and sternites in part with three rows of hairs or spines. Genus *Hoplopleura*
- 23—First antennal segment with a short, stout spine at the distal post axial angle or on the posterior margin.
 Genus *Neohæmatopinus* (in part)
 First antennal segment not so. 24
- 24—Posterior margin of second abdominal tergite of male distinctly emarginate with a group of spines at each end of this emargination. . . Genus *Neohæmatopinus* (in part)
 Posterior margin of second abdominal tergite of male not thus emarginate. 25
- 25—Abdomen with distinct, chitinized tergal and sternal plates in both sexes. Genus *Polyplax*
 Abdomen without distinct, chitinized tergal and sternal plates in the female and with these absent or extremely reduced in size in the male. . Genus *Linognathoides*

Family *Pediculidæ*

Leach, Zool. Misc., Vol. 3, p. 64 (1817); Giebel, Insecta Epizoa, p. 21 (1874); Piaget, Les Ped., pp. 615-618 (1880); Enderlein, Zool. Anz., Vol. 28, p. 136 (1904); Dalla Torre, Gen. Ins., Anopl., p. 8 (1908).

Antennæ five- or three- (obscurely five-) segmented. Eyes present, distinctly pigmented. Legs fitted for climbing, the tibiæ with a thumb-like process opposing the claw. No pretarsal sclerite between tibia and tarsus. Parasitic upon man, apes, and monkeys.

Subfamily *Pediculinæ*

Enderlein, Zool. Anz., Vol. 28, pp. 136, 138 (1904); Dalla Torre, Gen. Ins., Anopl., p. 8 (1908).

Antennæ distinctly five-segmented. No pleural plates.

Genus *Pediculus* Linnæus

Linnæus, *Systema Naturæ*, ed. 10, p. 610 (1758); Denny, *Mon. Anopl.*, pp. 12-13 (1842); Giebel, *Ins. Epizoa*, pp. 27-30 (1874); Piaget, *Les Ped.*, pp. 619-623 (1880); Enderlein, *Zool. Anz.*, Vol. 28, pp. 136, 138 (1904).

Head short. Legs all of approximately the same size. Abdomen elongated. Spiracles small. Abdominal segments without lateral projections, and with numerous small spines.

Type of the genus *P. capitis* De Geer.

1—*Pediculus mjöbergi*, new name. From *Atelcus* sp.? (traveling menagerie, Europe).

1910. *Pediculus affinis* (not of Burmeister), Mjöberg, *Ark. f. Zool.*, Vol. 6, pt. 13, pp. 169-171, f. 85.

2—*Pediculus capitis* De Geer. From man. Also recorded from *Atelcus ater* (locality unknown) and from *Cebus fatuellus* and *Cebus* sp. (Rio de Janeiro, S. America).

1758. *Pediculus humanus* Linnæus, *Syst. Naturæ*, 10th ed., p. 610.

1778. *Pediculus humanus* var. I, Linnæus, *ibid.*, 12th ed., Vol. 2, p. 1016.

1778. *Pediculus humanus* var. *capitis* De Geer, *Mem. Hist. Ins.*, Vol. 7, p. 67; pl. 1, f. 6.

1817. *Pediculus cervicalis* Leach, *Zool. Misc.*, Vol. 3, p. 66.

1818. *Pediculus capitis* Nitzsch, *Germar's Mag.*, Vol. 3, p. 305.

1842. *Pediculus capitis* Denny, *Mon. Anopl.*, pp. 13-16; pl. 26, f. 2.

1874. *Pediculus capitis* Giebel, *Ins. Epizoa*, pp. 30-32; pl. 1, f. 1-2.

1880. *Pediculus capitis* Piaget, *Les Ped.*, pp. 619-623; pl. 50, f. 2.

1912. *Pediculus capitis* Fahrenholz, *Jahresb. d. Niedersäch. Zool. Ver.*, pp. 2-12:t. f. 1, 3, 7, pl. 3, f. 3-4.

3—*Pediculus consobrinus* Piaget. From *Atelcus paniscus* (Museum Leyden).

1880. *Pediculus consobrinus* Piaget, *Les. Ped.*, pp. 626-628; pl. 51, f. 4.

1908. *Pediculus consobrinus* Dalla Torre, Gen. Ins. Anopl., p. 8.
 1911. *Pediculus consobrinus* Neumann, Arch. de Par., Vol. 14, pp. 412-413.

NOTE: This species is very doubtfully distinct from *Pediculus capitis*.

4—*Pediculus corporis* De Geer. From man.

1758. *Pediculus humanus* Linnæus, Syst. Nat., 10th ed., p. 610.
 1766. *Pediculus humanus* var. 2 Linnæus, ibid., 12th ed., Vol. 2, p. 1016.
 1778. *Pediculus humanus* var. *corporis* De Geer, Mem. Hist. Ins., Vol. 7, p. 67; pl. 1, f. 7.
 1818. *Pediculus vestimenti* Nitzsch, Germar's Mag., Vol. 3, p. 305.
 1842. *Pediculus vestimenti* Denny, Mon. Anopl., pp. 16-18; pl. 26, f. 1.
 1874. *Pediculus vestimenti* Giebel, Ins. Epizoa, pp. 27-30; pl. 1, f. 5.
 1880. *Pediculus vestimenti* Piaget, Les. Ped., pp. 623-625; pl. 5, f. 3.
 1908. *Pediculus corporis* Dalla Torre, Gen. Ins., Anopl., p. 8.
 1911. *Pediculus capitis* var. *vestimenti* Neumann, Arch. de Par., Vol. 14, pp. 411-412.
 1912. *Pediculus corporis* Fahrenholz, 2-3-4th Jahresb. d. Niedersäch. Zool. Ver., pp. 2-12; f. 2; pl. 3, f. 1-2.

5—*Pediculus lobatus* Fahrenholz. From *Atcleus pan* (Berlin Museum).

1913. *Pediculus lobatus* Fahrenholz (without description), Zool. Anz., Vol. 41, p. 373.

6—*Pediculus oblongus* Fahrenholz. From *Hylobates concolor* and *Hylobates syndactylus*.

1913. *Pediculus oblongus* Fahrenholz (without description), Zool. Anz., Vol. 41, p. 373.

7—*Pediculus schäffi* Fahrenholz. From *Pan* sp.?

1910. *Pediculus schäffi* Fahrenholz, Zool. Anz., Vol. 35, p. 714.

Genus *Phthirus* Leach

Phthirus Leach, Edinburgh Encycl., Vol. 9, p. 77 (1815); Zool. Misc., Vol. 3, p. 64 (1817); Enderlein, Zool. Anz., Vol. 28, pp. 136, 138 (1904); Dalla Torre, Gen. Ins., Anopl., p. 9 (1908).

Phthirus Burmeister, Handbuch der Entomologie, Vol. 2, p. 1 (1835); Denny, Mon. Anopl., pp. 8-9 (1842); Giebel, Ins. Epizoa, pp. 23-27; pl. 1, f. 8 (1874); Piaget, Les Ped., pp. 628-630; pl. 51, f. 5 (1880).

Anterior legs much smaller and with much slenderer claws than the others. Abdomen short and broad, the fifth to eighth segments with conical lateral processes. Spiracles large, those of the first three abdominal segments crowded close together.

1—*Phthirus pubis* Linnæus. From man.

- 1758. *Pediculus pubis* Linnæus, Syst. Naturæ, ed. 10, p. 611.
- 1817. *Phthirus inguinalis* Leach, Edinburgh Encycl., Vol. 9, p. 77.
- 1818. *Pediculus tabescentium* Alt. De Phthiriasi.
- 1842. *Phthirus inguinalis* Denny, Mon. Anopl., pp. 9-11; pl. 26, f. 3.
- 1874. *Phthirus inguinalis* Giebel, Ins. Epizoa, pp. 23-27; pl. 1, f. 8.
- 1880. *Phthirus inguinalis* Piaget, Les Ped., pp. 628-630; pl. 51, f. 5.
- 1904. *Phthirus pubis* Enderlein, Zool. Anz., Vol. 28, p. 136.
- 1908. *Phthirus pubis* Dalla Torre, Gen. Ins., Anopl., p. 9.

Subfamily *Pedicininae*

Enderlein, Zool. Anz., Vol. 28, pp. 136, 138 (1904); Dalla Torre, Gen. Ins., Anopl., p. 9 (1908); Fahrenholz, Jahresh. d. Niedersäch. Zool. Ver., pp. 28-29 (1912).

Antennæ three-segmented or obscurely five-segmented. Head more or less elongated. Abdomen with a single row of many very small spines on each segment. Pleural plates present on certain abdominal segments.

NOTE: The synonymy of the species in this subfamily has been dealt with by Fahrenholz and, although it is still far from clear, his conclusions have been adopted here.

Genus *Pedicinus* Gervais

Gervais, Aptères, Vol. 3, p. 301; pl. 48, f. 1 (1844); Giebel, Ins. Epizoa, pp. 32-33 (1874); Piaget, Les Ped., pp. 630-632 (1880); Dalla Torre, Gen. Ins., Anopl., p. 9 (1908); Fahrenholz, 2-3-4th Jahresb. d. Niedersäch. Zool. Ver., pp. 12-16 (1912).

All legs with slender, pointed claws of nearly the same size. Abdomen with three pairs of pleural plates.

Type of the genus *Pedicinus eurygaster* Piaget.

1—*Pedicinus breviceps* Piaget. From *Lasiopyga mona*. Also from *Cercopithecus*, sp., and *Pithecus albibarbatus*.

1880. *Pedicinus breviceps* Piaget, Les Ped., pp. 632-633; pl. 52, f. 1.

1910. *Pedicinus breviceps* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, p. 172.

1912. *Pedicinus breviceps* Fahrenholz, 2-3-4th Jahresb. d. Niedersäch. Zool. Ver., p. 16, 28.

2—*Pedicinus eurygaster* (Burmeister). From *Pithecus nemestrinus* and *Pithecus fascicularis*?

1838. *Pediculus eurygaster* Burmeister, Gen. Insectorum.

1880. *Pedicinus eurygaster* Piaget, Les Ped., p. 630; pl. 51, f. 6.

1908. *Pedicinus eurygaster* Dalla Torre, Gen. Ins., Anopl., p. 9.

1912. *Pedicinus eurygaster* Fahrenholz, 2-3-4th Jahresb. d. Niedersäch. Zool. Ver., pp. 12-15, 28.

3—*Pedicinus hamadryas* Mjöberg. Type from *Papio* sp.? (Zool. Mus. Hamburg).

1910. *Pedicinus hamadryas* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, pp. 172-174, f. 86-87.

4—*Pedicinus longiceps* Piaget. Type from *Pygathrix cristata*? Also from *Pithecus fascicularis*?

1880. *Pedicinus longiceps* Piaget, Les Ped., p. 632; pl. 51, f. 7.
1908. *Pedicinus longiceps* Dalla Torre, Gen. Ins., Anopl., p. 9.
1912. *Pedicinus longiceps* Fahrenholz, 2-3-4th Jahresb. d. Niedersäch. Zool. Ver., pp. 15, 28.
- 5—*Pedicinus paralleliceps* Mjöberg. From *Pithecus albibarbatulus* (Zool. Mus. Hamburg).
1910. *Pedicinus paralleliceps* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, pp. 174-176, f. 88.
- 6—*Pedicinus rhesi* Fahrenholz. From *Pithecus rhesus*.
1912. *Pedicinus rhesi* Fahrenholz, Zool. Anz., Vol. 39, p. 54.
1912. *Pedicinus rhesi* Fahrenholz, 2-3-4th Jahresb. d. Niedersäch. Zool. Ver., pp. 15-22; pl. 1, f. 4, 5; pl. 3, f. 6

Genus *Phthirpedicinus* Fahrenholz

Fahrenholz, Zool. Anz., Vol. 39, pp. 54-55 (1912), 2-3-4th Jahresb. d. Niedersäch. Zool. Ver., pp. 22-23.

Anterior legs with slender, pointed claw, others with short, blunt claws. Abdomen with two pairs of pleural plates.

Type of the genus *Phthirpedicinus micropilosus* Fahrenholz.

- 1—*Phthirpedicinus micropilosus* Fahrenholz. From *Pithecus rhesus*.
1912. *Phthirpedicinus micropilosus* Fahrenholz, Zool. Anz., Vol. 39, p. 55.
1912. *Phthirpedicinus micropilosus* Fahrenholz, 2-3-4th Jahresb. d. Niedersäch. Zool. Ver., pp. 22-23; pl. 1, f. 1-3.
- 2—*Phthirpedicinus microps* (Nitzsch). From *Pithecus sinicus*.
1838. *Pediculus eurygaster* Burmeister, Gen. Ins.
1864. *Pediculus microps* Nitzsch, Giebel, Zeit. f. ges. Naturw., Vol. 23, p. 32.
1874. *Pedicinus eurygaster* Giebel, Ins. Epizoa, pp. 32-33.
1912. *Phthirpedicinus microps* Fahrenholz, Zool. Anz., Vol. 39, p. 55.

1912. *Phthirpedicinus microps* Fahrenholz, 2-3-4th Jahresh. d. Niedersäch. Zool. Ver., pp. 13, 26, 28.
- 3—*Phthirpedicinus piageti* (Stroebelt). From *Pithecus brevicaudatus* or *P. rhesus*.
1881. *Pedicinus piageti* Stroebelt, Jahresh. d. westf. Ver. f. Wissensch. u. Kunst, Vol. 9, p. 82; pl. 1, f. 3.
1908. *Pedicinus piageti* Dalla Torre, Gen. Ins., Anopl., p. 9.
1912. *Phthirpedicinus piageti* Fahrenholz, 2-3-4th Jahresh. d. Niedersäch. Zool. Ver., p. 28.

Pediculidæ of uncertain position

Pedicinus graciliceps Piaget. From unknown host.

1885. *Pedicinus graciliceps* Piaget, Les Ped., Suppl., p. 141; pl. 15, f. 4.
1912. *Pedicinus?* *graciliceps* Fahrenholz, 2-3-4th Jahresh. d. Niedersäch. Zool. Ver., pp. 20, 29.

NOTE: Fahrenholz regards this species as probably belonging to an undescribed genus, characterized chiefly by the presence of five pairs of pleural plates.

Hæmatopinus albidus Rudow. From *Simia sylvanus*.

1869. *Hæmatopinus albidus* Rudow, Zeit. f. d. ges. Naturw., Vol. 34, p. 169.
1912. *Hæmatopinus?* *albidus* Fahrenholz, 2-3-4th Jahresh. d. Niedersäch. Zool. Ver., p. 29.

NOTE: Judging from the host, this probably belongs to the subfamily *Pedicininæ*. The genus cannot be determined.

Hæmatopinus obtusus Rudow. From *Pygathrix aurata?*

1869. *Hæmatopinus obtusus* Rudow, Zeit. f. d. ges. Naturw., Vol. 34, p. 169.
1908. *Hæmatopinus?* *obtusus* Dalla Torre, Gen. Ins., Anopl., p. 11.

NOTE: This probably belongs to the *Pediculidæ*.

Family *Hæmatopinidæ*

Enderlein, Zool. Anz., Vol. 28, pp. 136, 137 (1904); Dalla Torre, Gen. Ins., Anopl., p. 10 (1908).

Eyes lacking. Antennæ three- or five-segmented. Tibiæ with a thumb-like process opposing the claw.

Subfamily *Hæmatopiniæ*

Enderlein, Zool. Anz., Vol. 28, pp. 136, 138 (1904); Dalla Torre, Gen. Ins., Anopl., p. 10 (1908).

Antennæ five-segmented. Anterior legs of practically the size of the others. A triangular skeletal piece (pre-tarsal sclerite) present between tibia and tarsus.

Genus *Hæmatopinus* Leach

Leach, Zool. Misc., Vol. 3, pp. 64-65, f. 146 (1817); Denny, Mon. Anopl., pp. 24-25 (1842); Giebel, Ins. Epizoa, pp. 33-35 (1874); Piaget, Les Ped., pp. 633-635 (1880); Enderlein, Zool. Anz., Vol. 28, p. 138 (1904); Neumann, Arch. de Par., Vol. 13, pp. 529-532 (1909); Dalla Torre, Gen. Ins., Anopl., p. 10 (1908); Kellogg & Ferris, Anopl. and Mall., p. 10 (1915).

Head with very sharp, forward pointing temporal angles. Thorax broad. Legs all of practically the same size, with a strongly chitinized skeletal piece between tibia and tarsus. Abdomen with a swollen, pad-like, chitinized area on the lateral margins of the third to eighth segments. Tergites and sternites with a varying number of small chitinized plates. Each tergite and sternite with one transverse row of very small hairs.

Recorded from *Perissodactyla* and *Artiodactyla*.

Type of the genus, *Hæmatopinus suis* (Linnæus).

1—*Hæmatopinus asini* (Linnæus). From the domestic horse and the ass (cosmopolitan). Also from *Equus burchelli* (Zool. Mus. Hamburg).

1758. *Pediculus asini* Linnæus, Syst. Nat., 10th ed., p. 612.

1829. *Hæmatopinus asini* Stephens, Catalogue, Vol. 2, p. 329.
1838. *Pediculus macrocephalus* Burmeister, Gen. Rhyn. No. 18.
1842. *Hæmatopinus asini* Denny, Mon. Anopl., pp. 32-33; pl. 25, f. 1.
1865. *Hæmatopinus equi* Simmonds, Journ. Ag. Soc. Lond. (2), Vol. 1, pp. 60-62.
1874. *Hæmatopinus macrocephalus* Giebel, Ins. Epizoa, pp. 44-45; pl. 2, f. 5.
1880. *Hæmatopinus macrocephalus* Piaget, Les Ped., pp. 652-653; pl. 53, f. 3.
1891. *Hæmatopinus asini* Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., pp. 21-22, f. 9.
1896. *Hæmatopinus asini* Osborn, Bul. 5, n. s., pp. 180-181, f. 103.
1904. *Hæmatopinus asini* Enderlein, Zool. Anz., Vol. 28, p. 141.
1908. *Hæmatopinus asini* Dalla Torre, Gen. Ins., Anopl., p. 10.
1910. *Hæmatopinus asini* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, p. 167.
- 1a—*Hæmatopinus asini* var. *colorata* Piaget. From *Equus asinus*. (Europe).
1880. *Hæmatopinus macrocephalus* var. *colorata* Piaget, Les Ped., p. 654.
- 2—*Hæmatopinus bufali* (De Geer). From *Buffelus caffer*. (Congo Free State and Nyasaland, Africa).
1778. *Pediculus bufali* De Geer, Histoire des Ins., Vol. 7, p. 68; pl. 1, f. 11, 12.
1844. *Pediculus phthiriopsis* Gervais, Apteres, Vol. 3, p. 306.
1874. *Hæmatopinus phthiriopsis* Giebel, Ins. Epizoa, p. 47.
1880. *Hæmatopinus phthiriopsis* Piaget, Les Ped., p. 652.
1904. *Hæmatopinus phthiriopsis* Enderlein, Zool. Anz., Vol. 28, p. 141.
1908. *Hæmatopinus phthiriopsis* Dalla Torre, Gen. Ins., Anopl., p. 11.

1909. *Hæmatopinus bufali* Neumann, Arch. de Par., Vol. 13, pp. 500-505, f. 2-5.
1910. *Hæmatopinus phthiriopsis* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, p. 166.
- 3—*Hæmatopinus eurysternus* (Nitzsch). From *Bos taurus*.
1818. *Pediculus eurysternus* Nitzsch, Germar's Mag., Vol. 3, p. 305.
1842. *Hæmatopinus eurysternus* Denny, Mon. Anopl., pp. 29-30; pl. 25, f. 5.
1864. *Pediculus eurysternus* Nitzsch, Zeit. f. ges. Naturw., Vol. 23, p. 27.
1874. *Hæmatopinus eurysternus* Giebel, Ins. Epizoa, pp. 41-42; pl. 2, f. 8.
1880. *Hæmatopinus eurysternus* Piaget, Les Ped., pp. 648-650; pl. 53, f. 1.
1885. *Hæmatopinus tuberculatus* var. *penicillatus* Piaget, Les Ped., Suppl., p. 146.
1891. *Hæmatopinus eurysternus* Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., pp. 13-16, f. 6.
1896. *Hæmatopinus eurysternus* Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., pp. 172-175, f. 100.
1908. *Hæmatopinus eurysternus* Dalla Torre, Gen. Ins., Anopl., p. 11.
1909. *Hæmatopinus eurysternus* Neumann, Arch. de Par., Vol. 13, 1.c., pp. 498-500.
- 4—*Hæmatopinus longus* Neumann. From *Cervus unicolor*. (Nepaul, India).
1912. *Hæmatopinus longus* Neumann, Bul. Soc. Zool. France, Vol. 37, pp. 141-142, f. 1-4.
- 5—*Hæmatopinus* ? *oviformis* Rudow. From *Hircus magnificus*.
(This name does not appear in available catalogues of mammals).
1869. *Hæmatopinus oviformis* Rudow, Zeit. f. ges. Naturw., Vol. 34, p. 170.
1874. *Hæmatopinus oviformis* Giebel, Ins. Epizoa, p. 47.
1880. *Hæmatopinus oviformis* Piaget, Les Ped., p. 648.

1908. *Hæmatopinus? oviformis* Dalla Torre, Gen. Ins., Anopl., p. 11.
- 6—*Hæmatopinus phachochoeri* Enderlein. Type from *Phachochoerus ochiani massaicus*. (Kilimandjaro). Also from *Phachochoerus*, sp., *Potamochoerus choeropotamus* and *P. africanus*, *P. affinis nyasæ*. (German E. Africa and S. Africa).
1908. *Hæmatopinus phachochoeri* Enderlein, Swed. Exp. Kilimandjaro-Meru, Vol. 2, pt. 11, pp. 7-9, fig.
1909. *Hæmatopinus latus* Neumann, Arch. de Par., Vol. 13, pp. 505-508, f. 6-9.
1911. *Hæmatopinus peristictus* Kellogg & Paine, Bul. Ent. Res., Vol. 2, pp. 145-146; pl. 4, f. 3-6.
1912. *Hæmatopinus phachochoeri* Paine, Ent. News, Vol. 23, p. 468.
1912. *Hæmatopinus phachochoeri* Harms, Zool. Anz., Vol. 40, p. 293, f. 3.
1912. *Hæmatopinus incisus* Harms, Ibid., pp. 290-292, f. 12.
1916. *Hæmatopinus phachochoeri* Ferris, Ann. Durban Mus., Vol. 2 (in press).
- NOTE: This possibly contains two species; if so, they should stand as *Hæmatopinus phachochoeri* Enderlein and *Hæmatopinus peristictus* Kellogg & Paine.
- 7—*Hæmatopinus punctatus* (Rudow). From *Bos grunniens*.
1869. *Pediculus punctatus* Rudow, Zeit. f. ges. Naturw., Vol. 34, p. 167.
1874. *Hæmatopinus punctatus* Giebel, Ins. Epizoa, p. 47.
1880. *Hæmatopinus tuberculatus* var. *punctatus* Piaget, Les Ped., p. 652.
1908. *Pediculus? punctatus* Dalla Torre, Gen. Ins., Anopl., p. 9.
1910. *Hæmatopinus punctatus* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, p. 166-167.
- 8—*Hæmatopinus suis* (Linnæus). From domestic swine. (Cosmopolitan).*
1634. *Pediculus urius* Moufet, Theatrum Ins., p. 266.

1758. *Pediculus suis* Linnæus, Syst. Nat. (10th ed.), p. 611.
1817. *Hæmatopinus suis* Leach, Zool. Misc., Vol. 3, p. 65; pl. 146.
1818. *Pediculus urius* Nitzsch, Germar's Mag., Vol. 3, p. 305.
1842. *Hæmatopinus suis* Denny, Mon. Anopl., pp. 34-35; pl. 25, f. 2.
1847. *Hæmatopinus suis* Burmeister, Linnea. Entomol., Vol. 2, p. 577; pl. 1.
1874. *Hæmatopinus urius* Giebel, Ins. Epizoa, pp. 45-46; pl. 2, f. 6.
1880. *Hæmatopinus urius* Piaget, Les Ped., pp. 654-656; pl. 48, f. 4.
1891. *Hæmatopinus urius* Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., pp. 18-21, f. 8.
1896. *Hæmatopinus urius* Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., pp. 178-180, f. 102.
1904. *Hæmatopinus suis* Enderlein, Zool. Anz., Vol. 28, p. 124.
1908. *Hæmatopinus suis* Dalla Torre, Gen. Ins., Anopl., p. 11.
1911. *Hæmatopinus suis* Neumann, Arch. de Par., Vol. 14, pp. 406-490, f. 8a.
- 8a—*Hæmatopinus suis* var. *adventicius* Neumann. From *Sus vittatus* (East Indies).
1911. *Hæmatopinus suis* var. *adventicius* Neumann, Arch. de Par., Vol. 14, pp. 406-410, f. 8b.
- 9—*Hæmatopinus taurotragi* Cummings. From *Taurotragus oryx*. (Menagerie, Eng.)
1914. *Hæmatopinus taurotragi* Cummings, Bul. Ent. Res., Vol. 5, pp. 155-159, f. 1-2.
- 10—*Hæmatopinus tuberculatus* (Burmeister). Type from "Common buffalo or buffalo of India" (Vienna), also from "Buffalo of India, Tonkin, Summatra and Rumania," *Bison bison* (North America), *Camelus dromedarius* (India) and African camels.
1668. *Piddochio del cammello* Redi, Esperienze intorno alla generatione degl' insetti, pl. 20.

1758. *Pediculus cameli* Linnæus, Systema Naturæ, ed. 10, p. 611.
1839. *Pediculus tuberculatus* Burmeister, Gen. Rhyn., No. 20.
1844. *Pediculus cameli* Gervais, Apteres, Vol. 3, p. 306.
1852. *Hæmatopinus tuberculatus* Lucas, Ann. Ent. Soc. France, Vol. 10, ser. 2, pp. 529-533; pl. 11, No. 2.
1864. *Pediculus tuberculatus* Nitzsch, Zeit. f. ges. Naturw., Vol. 23, p. 32.
1867. *Hæmatopinus tuberculatus* Nitzsch, Ibid., Vol. 28, p. 397.
1874. *Hæmatopinus cameli* Giebel, Ins. Epizoa, p. 47.
1874. *Hæmatopinus tuberculatus* Giebel, Ibid., pp. 46-47.
1880. *Hæmatopinus cameli* Piaget, Les Ped., p. 644.
1880. *Hæmatopinus tuberculatus* Piaget, Ibid., pp. 650-652; pl. 53, f. 2.
1904. *Hæmatopinus tuberculatus* Enderlein, Zool. Anz., Vol. 28, p. 140.
1908. *Hæmatopinus* ? *cameli* Dalla Torre, Gen. Ins., Anopl., p. 11.
1908. *Hæmatopinus tuberculatus* Dalla Torre, Ibid., p. 11.
1909. *Hæmatopinus tuberculatus* Neumann, Arch. de Par., Vol. 13, pp. 497-500, f. 1.
1910. *Hæmatopinus tuberculatus* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, p. 167.
1911. *Hæmatopinus tuberculatus* Neumann, Arch. de Par., Vol. 14, pp. 413-414.

Subfamily *Linognathinæ*.

Trichaulinæ Enderlein, Zool. Anz., Vol. 28, p. 138 (1904).

Linognathinæ Enderlein, Zool. Anz., Vol. 29, p. 194 (1905); Dalla Torre, Gen. Ins., Anopl., p. 11 (1908).

Antennæ five-segmented. Anterior legs always distinctly smaller and with much slenderer claw than the posterior. No skeletal piece (pre-tarsal sclerite) between tibia and tarsus.

Genus *Enderleinellus* Fahrenholz

Fahrenholz, Zool. Anz., Vol. 39, p. 56 (1912); 2-3-4th Jahreshb. d. Niedersäch. Zool. Ver., pp. 52-58 (1912); Kellogg and Ferris, Anopl. & Mall. of N. Am. Mam., p. 40 (1915).

Anterior and middle pairs of legs of equal size, small and with slender claws. Posterior legs very large and stout, with stout claw. Head entirely without temporal angles. Abdomen with or without chitinized tergal and sternal plates. Abdominal segments for the most part with but one row of hairs or spines in both male and female. Third sternite usually with a widely separated pair of chitinized plates or areas, one near each lateral margin. Pleurites present on second to fifth or sixth segments.

Recorded only from *Sciuridae* and *Petauristidae* (Rodentia).

Type of the genus *Enderleinellus sphaerocephalus* (Nitzsch).

- 1—*Enderleinellus kelloggi* Ferris. Type from *Sciurus griseus nigripes* (California, U. S. A.). Also from *S. griseus griseus* (California).
 1916. *Enderleinellus kelloggi* Ferris, Psyche, Vol. 23 (in press).
- 2—*Enderleinellus longiceps* Kellogg & Ferris. Type from *Sciurus niger rufiventer* or *S. carolinensis* (Lincoln, Nebraska, U. S. A.) Also from *Sciurus niger rufiventer* (Indiana, U. S. A.) and *S. arizonensis huachuca* (Arizona, U. S. A.).
 1915. *Enderleinellus longiceps* Kellogg & Ferris, Anopl. & Mall. of N. Am. Mam., pp. 44-46; pl. 2, f. 5; pl. 4, f. 12; pl. 6, f. 2.
 1916. *Enderleinellus longiceps* Ferris, Psyche, Vol. 23 (in press).
- 3—*Enderleinellus osborni* Kellogg & Ferris. Type from *Citellus beecheyi* (California, U. S. A.). Also from *Citellus douglasi* (California).
 1915. *Enderleinellus osborni* Kellogg & Ferris, Anopl. & Mall. of N. Am. Mam., pp. 43-44; t. f. 15; pl. 4, f. 11; pl. 6, f. 6.
- 4—*Enderleinellus sphaerocephalus* (Nitzsch). Type from *Sciurus vulgaris* (Europe). Also from *Sciurus hudsonicus*

- petulans* and *S. hudsonicus vancouverensis* (Alaska) and *S. douglasi albolimbatus* (California, U. S. A.).
1818. *Pediculus sphærocephalus* Nitzsch, Germar's Mag., Vol. 3, p. 305.
1842. *Hæmatopinus sphærocephalus* Denny, Mon. Anopl., p. 36.
1864. *Pediculus sphærocephalus* Nitzsch, Zeit. f. ges. Naturw., Vol. 23, p. 27.
1874. *Hæmatopinus sphærocephalus* Giebel, Ins. Epizoa, pp. 35-36; pl. 1, f. 4.
1880. *Hæmatopinus sphærocephalus* Piaget, Les Ped., p. 640-641.
1904. *Polyplax ? sphærocephala* Enderlein, Zool. Anz., Vol. 28, p. 143.
1908. *Polyplax ? sphærocephala* Dalla Torre, Gen. Ins., Anopl., p. 14.
1910. *Polyplax ? sphærocephala* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, pp. 159-160.
1912. *Enderleinellus sphærocephalus* Fahrenholz, Zool. Anz., Vol. 39, p. 56.
1912. *Enderleinellus sphærocephalus* Fahrenholz, 2-3-4th Jahresb. d. Niedersäch. Zool. Ver., pp. 52-53, f. 22-23; pl. 2, f. 5, 6, 7.
1916. *Enderleinellus sphærocephalus* Ferris, Psyche, Vol. 23 (in press).
- 5—*Enderleinellus suturalis* (Osborn). Type from *Citellus franklini* or *C. tridecemlineatus* (Iowa). Also from *C. oregonus* and *C. mollis* (Nevada, U. S. A.), *C. townsendi* (Washington, U. S. A.), *Citellus beldingi*, *Xerospermophilus tereticaudus* and *Ammospermophilus nelsoni* (California, U. S. A.), *Cynomys gunnisoni* and *C. leucurus* (Colorado, U. S. A.).
1891. *Hæmatopinus suturalis* Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., p. 27, f. 15.
1896. *Hæmatopinus suturalis* Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., p. 185, f. 109.
1904. *Polyplax ? suturalis* Enderlein, Zool. Anz., Vol. 28, p. 143.
1908. *Polyplax ? suturalis* Dalla Torre, Gen. Ins., Anopl., p. 14.

1915. *Enderleinellus suturalis* Kellogg & Ferris, Anopl. & Mall. of N. Am. Mam., pp. 40-42; pl. 4, f. 9.
1916. *Enderleinellus suturalis* Ferris, Psyche, Vol. 23 (in press).
- 5a—*Enderleinellus suturalis* var. *occidentalis* Kellogg & Ferris. From *Callospermophilus chrysodeirus trinitatus* (California, U. S. A.).
1915. *Enderleinellus suturalis* var. *occidentalis* Kellogg & Ferris, Anopl. and Mall. of N. Am. Mam., p. 42; pl. 2, f. 3; pl. 4, f. 10; pl. 5, f. 17.
- 6—*Enderleinellus uncinatus* Ferris. From *Glaucomys sabrinus lascivus* (California, U. S. A.).
1916. *Enderleinellus uncinatus* Ferris, Psyche, Vol. 23 (in press).

Genus *Fahrenholzia* Kellogg & Ferris

Kellogg and Ferris, Anopl. and Mall. of N. Am. Mam., p. 32.

Antennæ similar in sexes. Head and thorax very small. Anterior legs small with slender claw. Middle and posterior legs much larger, sub-equal, with stout claws. Abdomen without chitinized tergal and sternal plates. Each abdominal segment with but one row of spines in both male and female. Pleural plates present on a variable number of segments. Sternite of second segment with a large chitinized plate near each lateral margin. Spiracles small.

Recorded only from *Heteromyidæ* (Rodentia).

Type of the genus *Fahrenholzia pinnata* Kellogg & Ferris.

- 1—*Fahrenholzia pinnata* Kellogg & Ferris. Type from *Dipodomys californicus* (California, U. S. A.). Also from *Dipodomys deserti*, *D. merriami*, *Perodipus* sp. and *Microdipodops polionotus* (California) and *Perognathus parvus olivaceous* (Nevada, U. S. A.).
1915. *Fahrenholzia pinnata* Kellogg & Ferris, Anopl. and Mall. of N. Am. Mam., pp. 32-35; t. f. 13; pl. 3, f. 2; pl. 5, f. 5-6; pl. 6, f. 10.
1916. *Fahrenholzia pinnata* Ferris, Psyche, Vol. 23 (in press).

2—*Fahrenholzia tribulosa* Ferris. Type from *Perognathus californicus* (California, U. S. A.). Also from *Perognathus formosus* (California).

1916. *Fahrenholzia tribulosa* Ferris, *Psyche*, Vol. 23 (in press).

Genus *Hæmodipsus* Enderlein

Hæmodipsus Enderlein, *Zool. Anz.*, Vol. 28, pp. 139, 143 (1904); Dalla Torre, *Gen. Ins., Anopl.*, p. 15 (1908); Mjöberg, *Ark. f. Zool.*, Vol. 6, pt. 13, p. 165 (1910); Kellogg & Ferris, *Anopl. and Mall. of N. Am. Mam.*, pp. 27-28 (1915).

Hæmatopinus (Polyplax) Neumann, *Arch. de Par.*, Vol. 13, p. 536 (1909).

Anterior legs small with slender claw, middle and posterior legs larger, sub-equal, with heavier claws. Head broad, thorax very small. Abdomen entirely without chitinized tergites and sternites, each segment with a single transverse row of spines or hairs. Pleural plates very small or wanting. Gonapods very short.

Recorded only from *Leporidae* (Rodentia).

Type of the genus *Hæmodipsus lyriocephalus* (Burm.).

1—*Hæmodipsus lyriocephalus* (Burm.). Type from *Lepus timidus* (Europe). Also from *L. europæus occidentalis* (Europe).

1839. *Pediculus lyriocephalus* Burmeister, *Gen. Rhyn.* No. 11, f. 7.

1842. *Hæmatopinus lyriocephalus* Denny, *Mon. Anopl.*, pp. 27-28; pl. 24, f. 4.

1864. *Pediculus lyriceps* Nitzsch, *Zeits. f. ges. Naturw.*, Vol. 23, p. 24.

1874. *Hæmatopinus lyriocephalus* Giebel, *Ins. Epizoa*, pp. 39-40; pl. 2, f. 2.

1880. *Hæmatopinus lyriocephalus* Piaget, *Les Ped.*, pp. 641-642; pl. 52, f. 5.

1904. *Hæmodipsus lyriocephalus* Enderlein, *Zool. Anz.*, Vol. 28, p. 143.

1908. *Hæmodipsus lyriocephalus* Dalla Torre, *Gen. Ins., Anopl.*, p. 15.

1909. *Hæmatopinus (Polyplax) lyriocephalus* Neumann, Arch. de Par., Vol. 13, p. 528.
1910. *Hæmodipsus lyriocephalus* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, p. 165.
1913. *Hæmodipsus lyriocephalus* Evans, Proc. Royal Phys. Soc. Edinburgh, Vol. 19, p. 94.
1915. *Hæmodipsus lyriocephalus* Kellogg & Ferris, Anopl. & Mall. of N. Am. Mam., p. 28.
- 2—*Hæmodipsus ventricosus* (Denny). From *Oryctolagus cuniculus* (Europe). Also from "domestic rabbit" (Europe and North America), *Lepus campestris* (Iowa, U. S. A.), *Lepus californicus* (California, U. S. A.), and *L. californicus deserticola* (Arizona, U. S. A.).
1842. *Hæmatopinus ventricosus* Denny, Mon. Anopl., pp. 30-31; pl. 25, f. 6.
1874. *Hæmatopinus ventricosus* Giebel, Ins. Epizoa, p. 47.
1880. *Hæmatopinus ventricosus* Piaget, Les Ped., p. 642.
1885. *Hæmatopinus ventricosus* Piaget, Les Ped., Suppl., pp. 141-147; pl. 16, f. 9.
1896. *Hæmatopinus ventricosus* Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., p. 182.
1904. *Hæmodipsus ventricosus* Enderlein, Zool. Anz., Vol. 28, p. 143.
1908. *Hæmodipsus ventricosus* Dalla Torre, Gen. Ins., Anopl., p. 15.
1909. *Hæmatopinus (Polyplax) ventricosus* Neumann, Arch. de Par., Vol. 13, pp. 527-528, f. 27.
1910. *Hæmodipsus ventricosus* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, p. 165.
1913. *Polyplax ventricosa* Evans, Proc. Royal Phys. Soc. Edinburgh, Vol. 19, p. 94.
1915. *Hæmodipsus ventricosus* Kellogg & Ferris, Anopl. and Mall. of N. Am. Mam., pp. 28-30; t. f. 11; pl. 2, f. 2; pl. 4, f. 5; pl. 5, f. 12.
1916. *Hæmodipsus ventricosus* Ferris, Psyche, Vol. 23 (in press).

Genus *Hoplopleura* Enderlein

Hoplopleura Enderlein, Zool. Anz., Vol. 28, pp. 221-223 (1904); Dalla Torre, Gen. Ins., Anopl., p. 14 (1908); Fahrenholz, 2-3-4th Jahresb. Niedersäch. Zool. Ver., pp. 44-46 (1912); Kellogg & Ferris, Anopl. & Mall. of N. Am. Mam., pp. 15-16 (1915).

Hæmatopinus (Polyplax) Neumann, Arch. de Par., Vol. 13, p. 531 (1909).

Antennæ similar in the sexes. Anterior legs small with slender claw; middle legs larger with stouter claw; posterior legs very stout with stout, heavy claw and usually with a small, pointed protuberance on the anterior margin of the tibia. Female with most of the abdominal tergites divided into three transverse plates, each bearing a row of spines. Males with most of the abdominal tergites and sternites divided into two plates or undivided, but with some divided into three. Anterior division of the third sternite in both sexes with two pairs, or with two groups of three very stout and conspicuous spines. Pleural plates present.

From *Muridæ* and *Sciuridæ* (Rodentia).

Type of the genus *Hoplopleura acanthopus* (Burm.).

1—*Hoplopleura acanthopus* (Burm.). Type from *Microtus arvalis* (Europe). Also from *Microtus agrestis*, *Mus musculus* and (?) *Sorex araneus* (Europe) and *Dicrostonyx torquatus* (Pitlekaj).

- 1839. *Pediculus acanthopus* Burmeister, Gen. Rhyn., No. 5, pl. 1, f. 2.
- 1842. *Hæmatopinus acanthopus* Denny, Mon. Anopl., p. 25; pl. 24, f. 3.
- 1864. *Pediculus acanthopus* Nitzsch, Zeits. f. ges. Naturw., Vol. 23, p. 27.
- 1874. *Hæmatopinus acanthopus* Giebel, Ins. Ep., pp. 36-37; pl. 2, f. 3.
- 1880. *Hæmatopinus acanthopus* Piaget, Les Ped., pp. 638-640; pl. 52, f. 4.
- 1904. *Polyplax acanthopus* Enderlein, Zool. Anz., Vol. 28, p. 142.
- 1904. *Hoplopleura acanthopus* Enderlein, Ibid., Vol. 28, pp. 220-223, f. 1-2.

1908. *Hoplopleura acanthopus* Dalla Torre, Gen. Ins., Anopl., p. 14.
1910. *Hoplopleura acanthopus* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, p. 164.
1912. *Hoplopleura acanthopus* Fahrenholz, 2-3-4th Jahresb. Niedersäch. Zool. Ver., pp. 46-52, f. 18-20; pl. 2, f. 14-15.
- 1a—*Hoplopleura acanthopus* var. *americanus* Kellogg & Ferris. Type from *Microtus californicus* (California, U. S. A.). Also from *M. (Lagurus) intermedius* and other species of *Microtus* (California, Iowa) and "white lemming" (Point Barrow, Alaska).
1891. *Hoplopleura acanthopus* Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., p. 23, f. 11.
1896. *Hoplopleura acanthopus* Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., pp. 181-182, f. 104.
1915. *Hoplopleura acanthopus* var. *americanus* Kellogg and Ferris, Anopl. and Mall. of N. Am. Mam., p. 16; t. f. 3; pl. 4, f. 2; pl. 5, f. 8.
- 2—*Hoplopleura arboricola* Kellogg & Ferris. Type from *Eutamias sonomæ* (California, U. S. A.). Also from *Sciurus griseus griscus*, *S. douglasi mollipilosus*, *S. douglasi albolimbatus*, *Eutamias alpinus*, *E. hindsi*, *E. sonomæ*, *E. merriami pricei*, *E. townsendi ochrogenys*, *E. speciosus frater* (California), and *Tamias striatus* (Iowa, U. S. A.).
1915. *Hoplopleura arboricola* Kellogg & Ferris, Anopl. and Mall. of N. Am. Mam., pp. 19-21; t. f. 6-7; pl. 4, f. 4; pl. 6, f. 8.
1916. *Hoplopleura arboricola* Ferris, Psyche, Vol. 23 (in press).
- 3—*Hoplopleura bidentata* (Neumann). From *Epimys rattus* (Lake Torrens, Australia).
1909. *Hæmatopinus (Polyplax) bidentatus* Neumann, Arch. de Par., Vol. 13, pp. 515-517, f. 18.
1915. *Hoplopleura* ? *bidentata* Kellogg & Ferris, Ann. Durban Mus., Vol. 1, pt. 2, p. 155.
- 4—*Hoplopleura enormis* Kellogg & Ferris. From *Arvicanthis dorsalis* (S. Africa).

1915. *Hoplopleura enormis* Kellogg & Ferris, Ann. Durban. Mus., Vol. 1, pt. 2, pp. 155-157; pl. 16, f. 4-4e.
- 5—*Hoplopleura erratica* (Osborn). Type from *Larus bonapartii* (straggler). Also from *Glaucomys volans*, *Microtus pennsylvanicus* and *Tamias striatus* (North America).
1896. *Hæmatopinus erraticus* Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., p. 186.
1904. *Polyplax* ? *erraticus* Enderlein, Zool. Anz., Vol. 28, p. 143.
1908. *Polyplax* ? *erratica* Dalla Torre, Gen. Ins., Anopl., p. 13.
1915. *Hoplopleura* ? *erratica* Kellogg & Ferris, Anopl. and Mall. of N. Am. Mam., pp. 18-19.
- NOTE: One of the three species, *Hoplopleura arboricola* Kellogg & Ferris, *H. trispinosa* Kellogg & Ferris, or *H. acanthopus* var. *americanus* Kellogg & Ferris, is probably a synonym of this species.
- 6—*Hoplopleura hesperomydis* (Osborn). Type from *Peromyscus leucopus* (Iowa, U. S. A.). Also from *Peromyscus maniculatus rubidus*, *P. maniculatus gambeli*, *P. boylei* and *Mus musculus* (California, U. S. A.).
1891. *Hæmatopinus hesperomydis* Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., p. 26, f. 14.
1896. *Hæmatopinus hesperomydis* Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., pp. 184-185, f. 108.
1904. *Polyplax* ? *hesperomydis* Enderlein, Zool. Anz., Vol. 28, p. 143.
1908. *Polyplax* ? *hesperomydis* Dalla Torre, Gen., Anopl., p. 13.
1915. *Hoplopleura hesperomydis* Kellogg & Ferris, Anopl. and Mall. of N. Am. Mam., p. 17; t. f. 4-5; pl. 4, f. 1; pl. 5, f. 14.
- 7—*Hoplopleura hirsuta* Ferris. Type from *Sigmodon hispidus* (North Carolina, U. S. A.). Also from *Sigmodon hispidus texianus* (Texas, U. S. A.) and *S. hispidus eremicus* (California, U. S. A.).
1916. *Hoplopleura hirsuta* Ferris, Psyche, Vol. 23 (in press).

8—*Hoplopleura hispida* (Grube). From *Lemmus obensis* (Siberia).

1851. *Pediculus hispidus* Grube, Midd. Reise, Zool., p. 497; pl. 32, f. 2 (figure labeled *P. gracilis*).

1874. *Hamatopinus hispidus* Giebel, Ins. Ep., p. 38.

1880. *Hamatopinus hispidus* Piaget, Les Ped., p. 640.

1904. *Polyplax hispida* Enderlein, Zool. Anz., Vol. 28, p. 142.

1908. *Polyplax hispida* Dalla Torre, Gen. Ins., Anopl., p. 13.

NOTE: This is probably a synonym of *H. acanthopus* (Burm.).

9—*Hoplopleura intermedia* Kellogg & Ferris. Type from *Mus coucha* (Zululand, South Africa).

1915. *Hoplopleura intermedia* Kellogg & Ferris, Ann. Durban Mus., Vol. 1, pt. 2, pp. 153-154; pl. 16, f. 5-5d.

1916. *Hoplopleura intermedia* Ferris, *ibid.*, Vol. 23 (in press).

10—*Hoplopleura longula* (Neumann). From *Micromys minutus* (Europe).

1909. *Hamatopinus (Polyplax) longulus* Neumann, Arch. de Par., Vol. 13, pp. 513-515, f. 15-17.

1910. *Hoplopleura lineata* Fahrenholz, Zool. Anz., Vol. 35, p. 715, fig.

1915. *Hoplopleura ? longula* Kellogg & Ferris, Ann. Durban Mus., Vol. 1, pt. 2, p. 155.

11—*Hoplopleura maniculata* (Neumann). From *Sciurus palmarum* (Asia).

1909. *Hamatopinus (Polyplax) maniculatus* Neumann, Arch. de Par., Vol. 13, pp. 521-523, f. 21-22.

1915. *Hoplopleura ? maniculata* Kellogg & Ferris, Ann. Durban Mus., Vol. 1, pt. 2, p. 155.

12—*Hoplopleura quadridentata* (Neumann). Type from *Holochilus squamipes* (probably *Nectomys squamipes* or *Nectomys apicalis*) (Peru, South America). Also from *Nesoryzomys indefessus* and *N. narboroughi* (Galapagos Islands, South America).

1909. *Hæmatopinus (Polyplax) quadridentatus* Neumann, Arch. de Par., Vol. 13, pp. 513-515.
1915. *Hoplopleura* ? *quadridentata* Kellogg & Ferris, Ann. Durban Mus., Vol. 1, pt. 2, p. 155.
1916. *Hoplopleura quadridentata* Ferris, Psyche, Vol. 23 (in press).
- 13—*Hoplopleura trispinosa* Kellogg & Ferris. Type from *Glaucomys sabrinus* ssp. ? (Oregon, U. S. A.). Also from *Glaucomys sabrinus lascivus* (California, U. S. A.) and *G. volans* (Maryland, U. S. A.).
1915. *Hoplopleura trispinosa* Kellogg & Ferris, Anopl. and Mall. of N. Am. Mam., pp. 22-23, t. f. 8; pl. 4, f. 3.
1916. *Hoplopleura trispinosa* Ferris, Psyche, Vol. 23 (in press).

Genus *Hybophthirus* Enderlein

Enderlein, Denksch. d. Med.-Naturw. Gesell. zu Jena, Vol. 14, p. 79 (1909); Cummings, Bul. Ent. Res., Vol. 4, p. 44 (1913).

Tarsus of anterior legs two-segmented, of the remainder one-segmented. Anterior legs small and slender, middle and posterior legs large and stout. Abdomen without strongly chitinized tergites and sternites. Pleural plates present. Thorax with a flattened triangular process on the dorsum near each lateral margin.

Recorded only from Orycteropodidæ (Tubulidentata).

Type of the genus *Hybophthirus notophallus* (Neumann).

- 1—*Hybophthirus notophallus* (Neumann). From *Orycteropus afer* (South Africa, German East Africa).
1909. *Hæmatopinus notophallus* Neumann, Jahrb. des Nassausichen Ver. f. Naturkunde, in Wiesbaden, p. 2.
1909. *Hybophthirus orycteropodi* Enderlein, Denksch. des Med.-Naturw. Gesell. zu Jena, Vol. 14, pp. 79-80; pl. 8, f. 1-3.
1913. *Hybophthirus notophallus* Cummings, Bul. Ent. Res., Vol. 4, pp. 44-45.
1914. *Hybophthirus notophallus* Waterston, Ann. S. Af. Mus., Vol. 10, pt. 9, p. 278.

Genus *Linognathoides* Cummings

Cummings, Bul. Ent. Res., Vol. 5, pp. 159-160 (1914); Kellogg & Ferris, Anopl. & Mall. of N. Am. Mam., pp. 23-24 (1915).

In general similar to *Polyplax*. Abdomen without chitinized tergal and sternal plates or with these very much reduced. Pleural plates present. Spiracles small.

Recorded from Muridæ and Sciuridæ (Rodentia).

Type of the genus *Linognathoides citelli* Cummings.

1—*Linognathoides citelli* Cummings. From *Citellus leptodactylus* and ? *Cricetulus phæus* (Transcaspia).

1914. *Linognathoides spermophili* Cummings, Bul. Ent. Res., Vol. 5, pp. 160-163, t. f. 3.

1916. *Linognathoides citelli* Cummings, Ann. Mag. Nat. Hist., ser. 8, Vol. 17, p. 107.

2—*Linognathoides inornatus* Kellogg & Ferris. Type from *Neotoma cinerea occidentalis* (California, U. S. A.). Also from *N. cinerea cinerea* and ? *N. fuscipes streatori* (California).

1915. *Linognathoides inornatus* Kellogg & Ferris, Anopl. & Mall. of Am. Mam., pp. 25-27, t. f. 10; pl. 2, f. 1; pl. 4, f. 7; pl. 5, f. 15; pl. 6, f. 3.

1916. *Linognathoides inornatus* Ferris, Psyche, Vol. 23 (in press).

3—*Linognathoides læviusculus* (Grube). Type from *Citellus eversmanni* (Jakutsk, Siberia).

1851. *Pediculus læviusculus* Grube, Middendorff's Reise, Vol. 2, p. 498; pl. 32, f. 5 (figure labeled *P. spermophili*).

1874. *Hæmatopinus læviusculus* Giebel, Ins. Epizoa, p. 38.

1880. *Hæmatopinus læviusculus* Piaget, Les Ped., p. 641.

1904. *Polyplax læviusculus* Enderlein, Zool. Anz., Vol. 28, p. 142.

1908. *Polyplax læviusculus* Dalla Torre, Gen. Ins., Anopl., p. 13.

1910. *Polyplax læviuscula* Mjöberg, Ark. f. Zool., Vol. 6. pt. 13, p. 160.

- 4—*Linognathoides montanus* (Osborn). Type from "Western Gray Squirrel" (probably *Citellus* sp.) (Ft. Collins, Colorado, U. S. A.). Also from *Citellus barrowensis* ? (Pt. Barrow, Alaska), *Citellus beccheyi*, *C. douglasi* (California, U. S. A.), *C. columbianus* (Washington, U. S. A.), *C. grammurus* (Arizona, U. S. A.), *C. mexicanus* ? (Guanajuato, Mexico), *Marmota flaviventris sierræ* (California, U. S. A.) and "Rock Squirrel" (Boulder, Colorado, U. S. A.).
1896. *Hæmatopinus montanus* Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., p. 184, f. 107.
1900. *Hæmatopinus columbianus* Osborn, Can. Ent., Vol. 32, pp. 215-216.
1904. *Polyplax* ? *montana* Enderlein, Zool. Anz., Vol. 28, p. 143.
1904. *Polyplax* ? *columbiana* Enderlein, Ibid., p. 143.
1908. *Polyplax* ? *columbiana* Dalla Torre, Gen. Ins., Anopl., p. 13.
1908. *Polyplax* ? *montana* Dalla Torre, Ibid., p. 13.
1914. *Linognathoides* ? *columbianus* Cummings, Bul. Ent. Res., Vol. 5, p. 160.
1915. *Linognathoides montanus* Kellogg & Ferris, Anopl. and Mall. of N. Am. Mam., pp. 24-25; t. f. 9; pl. 5, f. 1; pl. 6, f. 4.
1916. *Linognathoides montanus* Ferris, Psyche, Vol. 23 (in press).
- 5—*Linognathoides pectinifer* (Neumann). From *Xerus getulus* (Northern Africa).
1885. *Hæmatopinus setosus* (not of Burmeister) Piaget, Les Ped., Suppl., p. 143; pl. 15, f. 6.
1908. *Hæmatopinus setosus* Dalla Torre, Gen. Ins., Anopl., p. 11.
1909. *Hæmatopinus* (*Polyplax*) *pectinifer* Neumann, Arch. de Par., Vol. 13, pp. 528-529, f. 28-29.
1914. *Linognathoides setosus* Cummings, Bul. Ent. Res., Vol. 5, p. 160.

Genus *Linognathus* Enderlein

Trichaulus Enderlein, Zool. Anz., Vol. 28, pp. 139, 141 (1904).

Linognathus Enderlein, *Ibid.*, Vol. 29, p. 194 (1905); Dalla Torre, *Gen. Ins., Anopl.*, p. 12 (1908); Mjöberg, *Ark. f. Zool.*, Vol. 6, pt. 13, p. 156 (1910); Kellogg & Ferris, *Anopl. & Mall. of N. Am. Mam.*, p. 10 (1915).

Solenopotes Enderlein, *Zool. Anz.*, Vol. 28, p. 143 (1904); Dalla Torre, *Gen. Ins., Anopl.*, p. 15 (1908).

Hæmatopinus (Linognathus) Neumann, *Arch. de Par.*, Vol. 13, pp. 529-530 (1909).

Head usually rather slender and elongated. Temporal angles not prominent. Middle and posterior legs nearly equal in size, larger and stouter than the anterior. Abdomen entirely without chitinized tergal, sternal and pleural plates. Each abdominal segment with two or three transverse rows of hairs. Spiracles large. Gonapods usually long.

From *Perissodactyla*, *Artiodactyla*, *Hyracoidea*, and from the domestic dog.

Type of the genus *Linognathus piliferus* (Burm.).

1—*Linognathus angulatus* (Piaget). Type from *Cephalophus nigrifrons* (Africa). Also from *Cephalophus natalensis* and *Cephalophus* sp. (Africa).

1885. *Hæmatopinus ungulatus* Piaget, *Les Ped., Suppl.*, p. 144; pl. 15, f. 7.

NOTE: *ungulatus* is evidently a misprint for *angulatus*, the latter appearing in the description of the plates.

1908. *Hæmatopinus ungulatus* Dalla Torre, *Gen. Ins., Anopl.*, p. 11.

1910. *Linognathus angulatus* Mjöberg, *Ark. f. Zool.*, p. 157.

1916. *Linognathus angulatus* Ferris, *Ann. Durban Mus.*, Vol. 2 (in press).

2—*Linognathus breviceps* (Piaget). Type from *Cephalophus maxwelli* (Africa). Also from ? "Cearrus-Hirsch" (Guatemala).

1885. *Hæmatopinus breviceps* Piaget, *Les Ped., Suppl.*, p. 142; pl. 15, f. 5.

1908. *Hæmatopinus breviceps* Dalla Torre, *Gen. Ins., Anopl.*, p. 11.

NOTE: This species is probably the young of *Linognathus angulatus* (Piaget).

- 3—*Linognathus brevicornis* (Giebel). From *Giraffa cameloopardalis* (Africa).
1874. *Hæmatopinus brevicornis* Giebel, Ins. Epizoa, pp. 43-44.
1880. *Hæmatopinus brevicornis* Piaget, Les Ped., pp. 644-646; pl. 52, f. 7.
1904. *Trichaulus brevicornis* Enderlein, Zool. Anz., Vol. 28, p. 142.
1905. *Linognathus brevicornis* Enderlein, Ibid., Vol. 29, p. 194.
1908. *Linognathus brevicornis* Dalla Torre, Gen. Ins., Anopl., p. 12.
- 4—*Linognathus caviæ-capensis* (Pallas). From *Procapra capensis* (South Africa).
1767. *Pediculus caviæ-capensis* Pallas, Spicilegia Zoologica, Vol. 12, p. 32; pl. 3, f. 12-13.
1874. *Hæmatopinus leptoccephalus* Giebel, Ins. Epizoa, p. 47.
1880. *Hæmatopinus leptoccephalus* Piaget, Les Ped., p. 656.
1904. *Hæmatopinus leptoccephalus* Enderlein, Zool. Anz., Vol. 28, p. 141.
1908. *Hæmatopinus leptoccephalus* Dalla Torre, Gen. Ins., Anopl., p. 11.
1913. *Linognathus caviæ-capensis* Cummings, Bul. Ent. Res., Vol. 4, pp. 37-39, f. 2-3.
- 5—*Linognathus fahrenheitsi* Paine. Type from *Cervicapra arundinum* (Nyasaland, Africa). Also from *Cervicapra fulvorufula* (Zululand, Africa).
1911. *Linognathus forficulus* (not of Rudow) Kellogg & Paine, Bul. Ent. Res., Vol. 2, p. 147; pl. 4, f. 2-4.
1914. *Linognathus fahrenheitsi* Paine, Psyche, Vol. 21, p. 117.
1916. *Linognathus fahrenheitsi* Ferris, Ann. Durban Mus., Vol. 2 (in press).
- 6—*Linognathus forficulus* (Rudow). From *Capra ibex* (Europe).
1869. *Hæmatopinus forficulus* Rudow, Zeit. f. ges. Naturw., Vol. 34, p. 169.

1874. *Hæmatopinus forficulus* Giebel, Ins. Epizoa, p. 47.
1908. *Hæmatopinus? forficulus* Dalla Torre, Gen. Ins., Anopl., p. 11.
1914. *Linognathus forficulus* Paine, Psyche, Vol. 21, p. 117.
- 7—*Linognathus gazella* Mjöberg. From "gazelle." (Zool. Mus. Hamburg).
1910. *Linognathus gazella* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, pp. 157-159, f. 78.
- 8—*Linognathus leptocephalus* (Ehrenberg). From *Procapra syriacus* (Syria).
1829. *Pediculus leptocephalus* Ehrenberg, Symbolæ Physicæ.
1874. *Hæmatopinus leptocephalus* Giebel, Ins. Epizoa, p. 47.
1880. *Hæmatopinus leptocephalus* Piaget, Les Ped., p. 656.
1904. *Hæmatopinus leptocephalus* Enderlein, Zool. Anz., Vol. 28, p. 141.
1908. *Hæmatopinus leptocephalus* Dalla Torre, Gen. Ins., Anopl., p. 11.
1913. *Linognathus leptocephalus* Cummings, Bul. Ent. Res., Vol. 4, p. 37.
- 9—*Linognathus limnotragi* Cummings. From *Limnotragus gratus* (Congo, Africa).
1913. *Linognathus limnotragi* Cummings, Bul. Ent. Res., Vol. 4, pp. 36-37, f. 1.
- 10—*Linognathus ovillus* (Neumann). From domestic sheep (Scotland and New Zealand).
1907. *Hæmatopinus ovillus* Neumann, Revue vétérinaire, pp. 520-524.
1913. *Linognathus ovillus* Evans, Proc. Royal Phys. Soc. Edinburgh, Vol. 19, p. 94.
- 11—*Linognathus pedalis* (Osborn). From domestic sheep (Minnesota, Iowa and Nevada, U. S. A.).
1896. *Hæmatopinus pedalis* Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., pp. 170-172, f. 99.

1896. *Hæmatopinus ovis* Lugger, Rept. Ent., State Exper. Station, Minnesota, pp. 105-106, f. 75-76.
1904. *Trichaulus pedalis* Enderlein, Zool. Anz., Vol. 28, p. 142.
1905. *Linognathus pedalis* Enderlein, Zool. Anz., Vol. 29, p. 194.
1908. *Linognathus pedalis* Dalla Torre, Gen. Ins., Anopl., p. 12.
1915. *Linognathus pedalis* Kellogg & Ferris, Anopl. & Mall. of N. Am. Mam., p. 11.
- 12—*Linognathus piliferus* (Burmeister). From domestic dog (Cosmopolitan). Also once recorded from a ferret (England).
1776. ?*Pediculus canis familiaris* Müller, Prodr. Faunæ Danicæ, p. 184.
1780. ?*Pediculus canis familiaris* Fabricius, Fauna Gröenland, p. 215.
1838. *Pediculus piliferus* Burmeister, Gen. Rhyn., No. 13.
1842. *Hæmatopinus piliferus* Denny, Mon. Anopl., pp. 28-29; pl. 25, f. 4.
1847. *Hæmatopinus bicolor* Lucas, Ann. Soc. Ent. France, Vol. 5, ser. 2, pp. 538-539; pl. 8, f. 2a.
1861. *Pediculus isopus* Nitzsch, Zeit. f. ges. Naturw., Vol. 18, p. 290.
1864. *Pediculus flavidus* Nitzsch, Ibid., Vol. 23, p. 27.
1874. *Hæmatopinus piliferus* Giebel, Ins. Epizoa, pp. 40-41.
1880. *Hæmatopinus piliferus* Piaget, Les Ped., pp. 643-644; pl. 52, f. 6.
1891. *Hæmatopinus piliferus* Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., pp. 11-12, f. 5.
1896. *Hæmatopinus piliferus* Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., p. 169, f. 98.
1904. *Trichaulus piliferus* Enderlein, Zool. Anz., Vol. 28, p. 142.
1905. *Linognathus piliferus* Enderlein, Ibid., Vol. 29, p. 194.

1908. *Linognathus piliferus* Dalla Torre, Gen. Ins., Anopl., p. 12.
1910. *Linognathus piliferus* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, p. 157, f. 77.
1915. *Linognathus piliferus* Kellogg & Ferris, Anopl. & Mall. of N. Am. Mam., p. 11.
- 13—*Linognathus praelongiceps* (Neumann). From *Auchenia huanaca* (Bolivia, S. America).
1909. *Hæmatopinus (Linognathus) praelongiceps* Neumann, Arch. de Par., Vol. 13, pp. 508-511, f. 10-12.
- 14—*Linognathus stenopsis* (Burmeister). Type from domestic goat (Europe). Also from domestic goat (California, U. S. A.), sheep (Africa), *Antilope rupicapra* and *Capra ægyptica*.
1838. *Pediculus stenopsis* Burmeister, Gen. Rhyn., No. 3.
1842. *Hæmatopinus stenopsis* Denny, Mon. Anopl., p. 36.
1847. *Pediculus saccatus* Gervais, Apteres, Vol. 3, p. 307.
1864. *Pediculus stenopsis* Nitzsch, Zeit. f. ges. Naturw., Vol. 23, p. 30.
1864. *Pediculus schistopygus* Nitzsch, Ibid., Vol. 23, p. 31.
1874. *Hæmatopinus saccatus* Giebel, Ins. Epizoa, p. 47.
1874. *Hæmatopinus stenopsis* Giebel, Ibid., p. 44; pl. 2., f. 4.
1880. *Hæmatopinus saccatus* Piaget, Les Ped., p. 648.
1880. *Hæmatopinus stenopsis* Piaget, Ibid., p. 648.
1891. *Hæmatopinus stenopsis* Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., p. 12.
1896. *Hæmatopinus stenopsis* Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., p. 170.
1904. *Trichaulus saccatus* Enderlein, Zool. Anz., Vol. 28, p. 142.
1904. *Trichaulus stenopsis* Enderlein, Ibid., Vol. 28, p. 142.

1905. *Linognathus saccatus* Enderlein, Ibid., Vol. 29, p. 194.
 1905. *Linognathus stenopsis* Ibid., Vol. 29, p. 194.
 1908. *Linognathus saccatus* Dalla Torre, Gen. Ins., Anopl., p. 12.
 1908. *Linognathus stenopsis* Dalla Torre, Ibid., p. 12.
 1910. *Linognathus stenopsis* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, p. 159.
 1911. *Linognathus africanus* Kellogg & Paine, Bul. Ent. Res., Vol. 2, p. 146; pl. 4, f. 1, 5.
 1915. *Linognathus stenopsis* Kellogg & Ferris, Anopl. & Mall. of N. Am. Mam., p. 11.

NOTE: *Linognathus saccatus* is an unrecognizable species, recorded from *Capra ægyptica* (equals *Capra ægagrus* ?), but it is very probably the same as *Linognathus stenopsis*.

- 15—*Linognathus rupicapræ* (Rudow). From *Rupicapra rupicapra* (Europe).
 1869. *Hæmatopinus rupicapræ* Rudow, Zeit. f. ges. Naturw., Vol. 34, p. 170.
 1874. *Hæmatopinus rupicapræ* Giebel, Ins. Epizoa, p. 47.
 1880. *Hæmatopinus rupicapræ* Piaget, Les Ped., p. 648.
 1908. *Hæmatopinus rupicapræ* Dalla Torre, Gen. Ins., Anopl., p. 11.
- 16—*Linognathus tibialis* (Piaget). From *Antilope maori* (Zool. Garden, Rotterdam).
 1880. *Hæmatopinus tibialis* Piaget, Les Ped., pp. 646-647; pl. 52, f. 8.
 1904. *Trichaulus tibialis* Enderlein, Zool. Anz., Vol. 28, p. 142.
 1905. *Linognathus tibialis* Enderlein, Ibid., Vol. 29, p. 194.
 1908. *Linognathus tibialis* Dalla Torre, Gen. Ins., Anopl., p. 12.
- 16a—*Linognathus tibialis* var. *antennatus* (Piaget). From *Antilope* sp. (Zool. Garden, Rotterdam).
 1880. *Hæmatopinus tibialis* var. *antennatus* Piaget, Les Ped., p. 647; pl. 52, f. 8e.

1908. *Linognathus tibialis* var. *antennatus* Dalla Torre, Gen. Ins., Anopl., p. 12.
- 16b—*Linognathus tibialis* var. *appendiculatus* (Piaget). From *Antilope subgutturosa* (= *Gazella subgutturosa*?) (Zool. Garden, Rotterdam).
1880. *Hæmatopinus tibialis* var. *appendiculatus* Piaget, Les Ped., p. 647; pl. 52, f. 8g.
1908. *Linognathus tibialis* var. *appendiculatus* Dalla Torre, Gen. Ins., Anopl., p. 12.
- 16c—*Linognathus tibialis* var. *cervicapræ* (Lucas). From *Antilope cervicapra* (India).
1847. *Hæmatopinus cervicapræ* Lucas, Ann. Ent. Soc. France, Vol. 5, ser. 2, p. 534; pl. 7, f. 1.
1880. *Hæmatopinus tibialis* var. *cervicapræ* Piaget, Les Ped., p. 647.
1908. *Linognathus tibialis* var. *cervicapræ* Dalla Torre, Gen. Ins., Anopl., p. 13.
- 16d—*Linognathus tibialis* var. *euchore* Waterston. From *Antilope euchore* (Africa).
1914. *Linognathus tibialis* var. *euchore* Waterston, Ann. S. African Mus., Vol. 10, pt. 9, pp. 275-278, f. 1.
- 17—*Linognathus vituli* (Linnæus). From domestic cattle. (Cosmopolitan).
1758. *Pediculus vituli* Linnæus, Systema Naturæ, ed. 10, p. 611.
1766. *Pediculus vituli* Linnæus, Systema Naturæ, ed. 12, p. 1018.
1829. *Hæmatopinus vituli* Stephens, Catalogue, Vol. 2, p. 329.
1838. *Pediculus tenuirostris* Burmeister, Gen. Rhyn., No. 17.
1842. *Hæmatopinus vituli* Denny, Mon. Anopl., pp. 31-32; pl. 25, f. 3.
1864. *Pediculus oxyrrynchus* Nitzsch, Zeit. f. ges. Naturw., Vol. 23, p. 21.
1874. *Hæmatopinus tenuirostris* Giebel, Ins. Epizoa, p. 43; pl. 2, f. 9.
1880. *Hæmatopinus tenuirostris* Piaget, Les Ped., p. 650.

1883. *Hæmatopinus tenuirostris* Stroebelt, Ann. Mag. Nat. Hist., Vol. 11, ser. 5, pp. 73-108; pl. 3.
1885. *Hæmatopinus tenuirostris* Piaget, Les Ped., Suppl., pp. 145-146; pl. 15, f. 8.
1891. *Hæmatopinus vituli* Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., pp. 16-18, f. 7.
1896. *Hæmatopinus vituli* Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., pp. 176-177, f. 101.
1904. *Trichaulus vituli* Enderlein, Zool. Anz., Vol. 28, p. 142.
1904. *Solenopotes capillatus* Enderlein, Zool. Anz., Vol. 28, p. 144, f. 14,15.
1908. *Linognathus vituli* Dalla Torre, Gen. Ins., Anopl., p. 12.
1908. *Solenopotes capillatus* Dalla Torre, Ibid., p. 15.
1915. *Linognathus vituli* Kellogg & Ferris, Anopl. & Mall. of N. Am. Mam., p. 10.
1916. *Linognathus vituli* Ferris, Ent. News, Vol. 27 (in press).

Genus *Cervophthirius* Mjöberg

Cervophthirius Mjöberg, Ent. Tidskrift, Vol. 36, p. 282 (1915); Ferris, Ent. News, Vol. 27 (in press), 1916.

Differing from *Linognathus* only in the sharp posterior lateral angles of the head and the presence of but a single row of hairs upon each abdominal segment.

Recorded only from Cervidæ (Artiodactyla).

Type of the genus *Cervophthirius tarandi* Mjöberg.

- 1—*Cervophthirius crassicornis* (Nitzsch). Type from *Cervus claphus* (Europe). Also from *Odocoileus columbianus* (California, U. S. A.).
1818. *Pediculus crassicornis* Nitzsch, Germar's Mag., Vol. 3, p. 305.
1842. *Hæmatopinus crassicornis* Denny, Mon. Anopl., p. 36.
1864. *Pediculus crassicornis* Nitzsch, Zeit. f. ges. Naturw., Vol. 23, p. 26.
1874. *Hæmatopinus crassicornis* Giebel, Ins. Epizoa, p. 41; pl. 2, f. 7.

1880. *Hæmatopinus crassicornis* Piaget, Les Ped., p. 644.
1908. *Hæmatopinus crassicornis* Dalla Torre, Gen. Ins., Anopl., p. 11.
1916. *Cervophthirius crassicornis* Ferris, Ent. News, Vol. 27 (in press).
- 2—*Cervophthirius tarandi* Mjöberg. From *Rangifer tarandus* (Karesuando, Sweden).
1915. *Cervophthirius tarandi* Mjöberg, Ent. Tidskrift, Vol. 36, pp. 283-285, f. 1-4.
- NOTE: It is extremely doubtful if this is at all distinct from *Cervophthirius crassicornis* (N.).

Genus *Eulinognathus* Cummings

Eulinognathus Cummings, Ann. Mag. Nat. Hist., ser. 8, Vol. 17, p. 90 (1916).

Head longer than broad, antennæ arising just in front of half way, broader behind the antennæ than in front. Behind, the head is sunk deep into the thorax. Around the mouth, in front, a circlet of triangular denticles. Abdomen without tergites or sternites. Five pairs of pleurites, the anterior pair well developed. First pair of legs small, second and third larger, sub-equal. Hairs on the abdomen modified, long, flattened, parallel-sided, truncate at tip, one row on each segment.

Type of the genus *Eulinognathus denticulatus* Cummings. Recorded from *Pedetidæ* and *Dipodidæ* (Rodentia).

- 1—*Eulinognathus denticulatus* Cummings. From *Pedetes caffer*.
1916. *Eulinognathus denticulatus* Cummings, Ann. Mag. Nat. Hist., ser. 8, Vol. 17, pp. 90-94, f. 1.
- 2—*Eulinognathus aculeatus* (Neumann). From *Dipus* sp. (Djerba, Tunis).
1912. *Hæmatopinus (Polyplax) aculeatus* Neumann, Bul. Soc. Zool., France, Vol. 37, pp. 143-145, f. 5-6.

Genus *Ncohamatopinus* Mjöberg

Ncohamatopinus Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, p. 160 (1910); Cummings, Bul. Ent. Res., Vol. 3, p. 393

(1912); Kellogg & Ferris, Anopl. and Mall. of N. Am. Mam., pp. 35-36.

Acanthopinus Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, pp. 160-161 (1910).

Antennæ dissimilar in the sexes, the male with a preaxial process or a pair of spines at the apex of the third antennal segment. First antennal segment in both sexes usually with the distal post axial angle more or less produced and bearing a stout spine or with a stout spine on the posterior margin. Anterior legs small, with slender claw, middle and posterior legs larger. Abdomen with or without chitinized tergal and sternal plates. Abdominal tergites and sternites of the female, for the most part, with two transverse rows of spines, male with lesser number, bearing two rows of spines. Posterior margin of second tergite of male always distinctly emarginate with a closely set group of spines of various lengths at the end of this emargination. Pleural plates present. Spiracles small. Gonapods very short.

Recorded from *Sciuridæ* and *Pctauristidæ* (Rodentia).

Type of the genus *Neohæmatopinus sciuropteri* (Osborn).

1—*Neohæmatopinus antennatus* (Osborn). Type from *Sciurus cinereus* var. *ludovicianus* (probably *S. niger rufiventer*), (Iowa, U. S. A.). Also from *Sciurus griscus griscus* (California, U. S. A.).

1891. *Hæmatopinus antennatus* Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., p. 25, f. 13.

1896. *Hæmatopinus antennatus* Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., pp. 183-184, f. 106.

1904. *Polyplax? antennata* Enderlein, Zool. Anz., Vol. 28, p. 143.

1908. *Polyplax? antennata* Dalla Torre, Gen. Ins., Anopl., p. 13.

1910. *Acanthopinus antennatus* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, p. 161.

1915. *Neohæmatopinus antennatus* Kellogg & Ferris, Anopl. & Mall. of N. Am. Mam., pp. 36-37; t. f. 14a-14b; pl. 5, f. 10; pl. 6, f. 5.

1a—*Neohæmatopinus antennatus* var. *semifasciatus* Ferris. Type from *Sciurus douglasi albolimbatus* (California, U. S. A.). Also from *S. douglasi mollipilosus* (California).

1915. *Neohæmatopinus antennatus* (in part) Kellogg & Ferris, Anopl. & Mall. of N. Am. Mam., pp. 36-37.

1916. *Neohæmatopinus antennatus* var. *semifasciatus* Ferris, Psyche, Vol. 23 (in press).

NOTE: This is perhaps identical with *Neohæmatopinus sciurinus* (Mjöb.).

2—*Neohæmatopinus echinatus* (Neumann). From *Sciurus palmarum* (Asia). Also as straggler or mistaken record from a bat, *Scotophilus wroughtoni* (Asia).

1909. *Hæmatopinus (Polyplax) echinatus* Neumann, Arch. de Par., Vol. 13, pp. 517-521, f. 19-20.

1912. *Neohæmatopinus echinatus* Cummings, Bul. Ent. Res., Vol. 3, p. 393.

3—*Neohæmatopinus heliosciuri* Cummings. From *Heliosciurus palliatus* (British East Africa).

1912. *Neohæmatopinus heliosciuri* Cummings, Bul. Ent. Res., Vol. 3, pp. 393-395, f. 1.

4—*Neohæmatopinus pacificus* Kellogg & Ferris. Type from *Eutamias sonomæ* (California, U. S. A.). Also from *Eutamias hindsi*, *E. alpinus* and other species of *Eutamias*. (California).

1915. *Neohæmatopinus pacificus* Kellogg & Ferris, Anopl. and Mall. of N. Am. Mam., pp. 38-40; t. f. 14c-14d; pl. 1, f. 2; pl. 5, f. 3, 7a-7b.

1916. *Neohæmatopinus pacificus* Ferris, Psyche, Vol. 23 (in press).

5—*Neohæmatopinus sciurinus* (Mjöberg). From *Sciurus vulpinus* (Zool. Mus. Hamburg). (This is perhaps *Sciurus niger* of North America).

1910. *Acanthopinus sciurinus* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, pp. 161-164, f. 80-83.

1912. *Neohæmatopinus sciurinus* Cummings, Bul. Ent. Res., Vol. 3, p. 393.

6—*Neohæmatopinus sciuropteri* (Osborn). Type from *Glaucomys volans* (Iowa, U. S. A.). Also from *Glaucomys sabrinus lascivus* and *G. sabrinus ssp.* (California, U. S. A.).

1891. *Hæmatopinus sciuropteri* Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., pp. 23-24, f. 12.

1896. *Hæmatopinus sciuropteri* Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., pp. 182-183, f. 105.
1904. *Polyplax* ? *sciuropteri* Enderlein, Zool. Anz., Vol. 28, p. 143.
1908. *Polyplax* ? *sciuropteri* Dalla Torre, Gen. Ins., Anopl., p. 14.
1910. *Neohæmatopinus sciuropteri* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, p. 160, f. 79.
1912. *Neohæmatopinus sciuropteri* Cummings, Bul. Ent. Res., Vol. 3, p. 393.
1915. *Neohæmatopinus sciuropteri* Kellogg & Ferris, Anopl. & Mall. of N. Am. Mam., p. 36; pl. 1, f. 1; pl. 5, f. 2, 13.
1916. *Neohæmatopinus sciuropteri* Ferris, Psyche, Vol. 23 (in press).

Genus *Polyplax* Enderlein

Polyplax Enderlein, Zool. Anz., Vol. 28, pp. 139, 142, 223 (1904); Dalla Torre, Gen. Ins., Anopl., p. 13 (1908); Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, p. 159 (1910); Fahrenholz, 2-3-4th Jahresb. Niedersäch. Zool. Ver., pp. 29-30 (1912); Kellogg & Ferris, Anopl. & Mall. of N. Am. Mam., p. 11 (1915).

Hæmatopinus (Polyplax) Neumann, Arch. de Par., Vol. 13, pp. 529-532 (1909).

Eremophthirius Glinkiewicz, Sitz. d. Kaiserl. Ak. Wiss. Wien, Natur. Klasse, Vol. 116, pp. 381-383 (1907).

Antennæ sometimes differing in the sexes, the male frequently having the third segment with a distal, preaxial process. Anterior legs small with slender claw, middle legs larger with stouter claw, posterior legs somewhat larger and with heavier claw than the middle. Female with most of the abdominal tergites and sternites divided into two transverse plates, each bearing a row of spines or hairs. Male with a smaller number of tergites and sternites thus divided. Pleural plates present. Spiracles small.

One species recorded from *Soricidæ* (Insectivora), one from *Myoxidæ* (Rodentia), the remainder from *Muridæ* (Rodentia).

Type of the genus *Polyplax spinulosa* (Burm.)

- 1—*Polyplax affinis* (Burmeister). From *Apodemus sylvaticus* (Europe). Also from ?*Apodemus agrarius* (Europe).
1839. *Pediculus affinis* Burmeister, Gen. Rhyn., No. 10.
1842. *Hæmatopinus affinis* Denny, Mon. Anopl., p. 36.
1864. *Pediculus affinis* Nitzsch, Zeit. f. ges. Naturw., Vol. 23, p. 22.
1874. *Hæmatopinus affinis* Giebel, Ins. Epizoa, p. 39; pl. 1, f. 9.
1880. *Hæmatopinus acanthopus* var. *affinis* Piaget, Les Ped., p. 639.
1904. *Polyplax affinis* Enderlein, Zool. Anz., Vol. 28, p. 142.
1908. *Polyplax affinis* Dalla Torre, Gen. Ins., Anopl., p. 13.
1912. *Polyplax affinis* Fahrenholz, 2-3-4th Jahresb. Niedersäch. Zool. Ver., pp. 39-42, f. 13-15.
- 2—*Polyplax auricularis* Kellogg & Ferris. Type from *Peromyscus maniculatus rubidus* (California, U. S. A.). Also from *Peromyscus sitchensis prevostensis* (Forrester Is., Alaska), *P. maniculatus gambeli* and *Onychomys torridus pulcher* (California) and *O. leucogaster arcticeps* (Colorado, U. S. A.).
1915. *Polyplax auricularis* Kellogg & Ferris, Anopl. & Mall. of N. Am. Mam., pp. 13-15, t. f. 2; pl. 1, f. 4; pl. 4, f. 8.
1916. *Polyplax auricularis* Ferris, Psyche, Vol. 23 (in press).
- 3—*Polyplax brachyrrhynchus* Cummings. From *Acomys cahirinus* (Egypt).
1914. *Polyplax brachyrrhynchus* Cummings, Proc. Zool. Soc. London, pp. 246-251, t. f. 1-3, 13-14.
- 4—*Polyplax clavicornis* (Nitzsch). From *Mcriones* sp. (Northern Africa).
1864. *Pediculus clavicornis* Nitzsch, Zeit. f. ges. Naturw., Vol. 23, p. 32.
1869. *Hæmatopinus clavicornis* Nitzsch & Giebel, Ibid., Vol: 28, p. 397.

1874. *Hæmatopinus clavicornis* Giebel, Ins. Epizoa, pp. 37-38.
1880. *Hæmatopinus clavicornis* Piaget, Les Ped., p. 640.
1904. *Polyplax clavicornis* Enderlein, Zool. Anz., Vol. 28, p. 142.
1908. *Polyplax clavicornis* Dalla Torre, Gen. Ins., Anopl., p. 13.
- 4—*Polyplax cummingsi* Ferris. From *Dasymys incomtus* (Zululand, S. Africa).
1916. *Polyplax cummingsi* Ferris, Ann. Durban Mus., Vol. 2 (in press).
- 5—*Polyplax gracilis* Fahrenholz. Type from *Micromys minutus* (Europe). Also from *Mus chrysophilus* (Zululand, South Africa).
1910. *Polyplax gracilis* Fahrenholz, Zool. Anz., Vol. 35, p. 715.
1912. *Polyplax gracilis* Fahrenholz, 2-3-4th Jahresb. d. Niedersäch. Zool. Ver., pp. 42-44, f. 16-17; pl. 1, f. 10-11.
1916. *Polyplax gracilis* Ferris, Ann. Durban Mus., Vol. 2 (in press).
- 6—*Polyplax jonesi* Kellogg & Ferris. From *Saccostomus campestris* (Zululand, South Africa).
1915. *Polyplax jonesi* Kellogg & Ferris, Ann. Durban Mus., Vol. 1, pt. 2, pp. 151-152; pl. 15, f. 3-3e.
1916. *Polyplax jonesi* Ferris, Ibid., Vol. 2 (in press).
- 7—*Polyplax* ? *miacantha* Speiser. From "einer kleinen Ratte mit sehr dicken, stachelartigen Haaren." (Salomona, Abyssinia).
1905. *Polyplax miacantha* Speiser, Centralbl. f. Bakter., Vol. 38, pt. 1 (Originale), pp. 318-319. (Figure does not belong to it.)
1908. *Polyplax miacantha* Dalla Torre, Gen. Ins., Anopl., p. 13.
- 8—*Polyplax otomydis* Cummings. Type from *Otomys irroratus tropicalis* (British East Africa). Also from *Otomys irroratus* and *O. brantsi lutcolus* (South Africa).
1912. *Polyplax otomydis* Cummings, Bul. Ent. Res., Vol. 3, pp. 395-397, f. 2.

1914. *Polyplax otomydis* Waterston, Ann. S. Af. Mus., Vol. 10, p. 275.
1915. *Polyplax otomydis* Kellogg & Ferris, Ann. Durban Mus., Vol. 1, pt. 2, p. 150.
1916. *Polyplax otomydis* Ferris, Ibid., Vol. 2 (in press).
- 9—*Polyplax oxyrrhynchus* Cummings. From *Acomys caharinus* (Egypt).
1915. *Polyplax oxyrrhynchus* Cummings, Proc. Zool. Soc. Lond., pp. 251-260, 262-265; t. f. 4-6, 8-9, 11-13.
- 10—*Polyplax pectinata* Cummings. From *Epimys aurifer* (Malay Peninsula).
1913. *Polyplax pectinata* Cummings, Bul. Ent. Res., Vol. 4, pp. 35-36.
- 11—*Polyplax* ? *pleurophæa* (Burmeister). From *Dryomys nitedula* (Europe).
1839. *Pediculus pleurophæus* Burmeister, Gen. Rhyn., No. 7.
1864. *Pediculus pleurophæus* Nitzsch, Zeit. f. ges. Naturw., Vol. 23, p. 27.
1874. *Hæmatopinus leucophæus* Giebel, Ins. Epizoa, p. 37.
1880. *Hæmatopinus leucophæus* Piaget, Les Ped., p. 640.
1904. *Polyplax pleurophæa* Enderlein, Zool. Anz., Vol. 28, p. 142.
1908. *Polyplax pleurophæa* Dalla Torre, Gen. Ins., Anopl., p. 13.
- 12—*Polyplax reclinata* (Nitzsch). From *Sorex araneus* (Europe).
1864. *Pediculus reclinatus* Nitzsch, Zeit. f. ges. Naturw., Vol. 23, p. 23.
1874. *Hæmatopinus reclinatus* Giebel, Ins. Epizoa, p. 37.
1880. *Hæmatopinus reclinatus* Piaget, Les Ped., p. 639.
1904. *Polyplax reclinata* Enderlein, Zool. Anz., Vol. 28, p. 142.

1904. *Hoplopleura reclinata* Enderlein, Ibid., Vol. 28, p. 222.
1908. *Hoplopleura reclinata* Dalla Torre, Gen. Ins., Anopl., p. 14.
1910. *Hæmatopinus (Polyplax) spiniger reclinatus* Neumann, Arch. de Par., Vol. 13, pp. 524-525, f. 24.
1912. *Polyplax reclinata* Fahrenholz, 2-3-4th Jahresb. d. Niedersäch. Zool. Ver., pp. 37-39, f. 11-12; pl. 1, f. 12-13; pl. 2, f. 2-4; pl. 3, f. 7.
- 13—*Polyplax serrata* (Burmeister). From *Mus musculus* (Europe).
1839. *Pediculus serratus* Burmeister, Gen. Rhyn., No. 6.
1842. *Hæmatopinus serratus* Denny, Mon. Anopl., p. 36.
1864. *Pediculus serratus* Nitzsch, Zeit. f. ges. Naturw., Vol. 23, p. 27.
1874. *Hæmatopinus serratus* Giebel, Ins. Epizoa, p. 36; pl. 1, f. 6.
1880. *Hæmatopinus serratus* Piaget, Les Ped., p. 639.
1904. *Polyplax serrata* Enderlein, Zool. Anz., Vol. 28, p. 142.
1908. *Polyplax serrata* Dalla Torre, Gen. Ins., Anopl., p. 14.
1913. *Polyplax serrata* Evans, Proc. Roy. Phys. Soc. Edinburgh, Vol. 19, p. 94.
- 14—*Polyplax ? spiculifera* (Gervais). From *Mus barbarus* (Algiers).
1844. *Pediculus spiculifer* Gervais, Aptères, Vol. 3, p. 302.
1874. *Hæmatopinus spiculifer* Giebel, Ins. Epizoa, p. 37.
1880. *Hæmatopinus spiculifer* Piaget, Les Ped., p. 639.
1904. *Polyplax spiculifera* Enderlein, Zool. Anz., Vol. 28, p. 142.
1908. *Polyplax spiculifera* Dalla Torre, Gen. Ins., Anopl., p. 14.

15—*Polyplax spiniger* (Burmeister). From *Arvicola amphibius* (Europe).

1839. *Pediculus spiniger* Burmeister, Gen. Rhyn., No. 9, f. 5.
 1842. *Hæmatopinus spiniger* Denny, Mon. Anopl., p. 27; pl. 24, f. 6.
 1864. *Pediculus spiniger* Nitzsch, Zeit. f. ges. Naturw., Vol. 23, p. 23.
 1874. *Hæmatopinus spiniger* Giebel, Ins. Epizoa, p. 39; pl. 2, f. 1.
 1880. *Hæmatopinus spiniger* Piaget, Les Ped., pp. 637-638; pl. 52, f. 3.
 1904. *Polyplax spinigera* Enderlein, Zool. Anz., Vol. 28, p. 142.
 1908. *Polyplax spinigera* Dalla Torre, Gen. Ins., Anopl., p. 14.
 1909. *Hæmatopinus (Polyplax) spiniger* Neumann, Arch. de Par., Vol. 13, p. 524, f. 24.

16—*Polyplax spinulosa* (Burmeister). Type from *Epimys norvegicus* (Europe). Also from *Epimys rattus* and *E. rattus alexandrinus* (Cosmopolitan) and *Microtus californicus* and *Phenacomys longicaudus* (California, U. S. A.).

1839. *Pediculus spinulosus* Burmeister, Gen. Rhyn., No. 8.
 1842. *Hæmatopinus spinulosus* Denny, Mon. Anopl., p. 26; pl. 24, f. 5.
 1864. *Pediculus denticulatus* Nitzsch, Zeit. f. ges. Naturw., Vol. 23, p. 24.
 1874. *Hæmatopinus spinulosus* Giebel, Ins. Epizoa, pp. 38-39; pl. 1, f. 7.
 1880. *Hæmatopinus spinulosus* Piaget, Les Ped., pp. 636-637; pl. 52, f. 2.
 1891. *Hæmatopinus spinulosus* Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., p. 22.
 1896. *Hæmatopinus spinulosus* Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., p. 18.
 1904. *Polyplax spinulosa* Enderlein, Zool. Anz., Vol. 28, p. 142.
 1905. *Polyplax spinulosa* Enderlein, Ibid., Vol. 29, pp. 192-194.

1908. *Polyplax spinulosa* Dalla Torre, Gen. Ins., Anopl., p. 14.
1909. *Hæmatopinus (Polyplax) spinulosus* Neumann, Arch. de Par., Vol. 13, p. 526, f. 26.
1910. *Polyplax spinulosa* Mjöberg, Ark. f. Zool., Vol. 6, No. 13, p. 160.
1912. *Polyplax spinulosa* Fahrenholz, 2-3-4th Jahresb. de Niedersäch. Zool. Ver., pp. 30-37, f. 8-10; pl. 2, f. 8-13.
1915. *Polyplax spinulosa* Kellogg & Ferris, Anopl. and Mall. of N. Am. Mam., pp. 12-13; t. f. 1; pl. 5, f. 11a-11b; pl. 6, f. 7.
- 17—*Polyplax stephensi* (Christophers & Newstead). From *Gerbillus indicus* (India).
1906. *Hæmatopinus stephensi* Christophers & Newstead, Rept. Thompson Yates Lab., Liverpool, Vol. 7, p. 3; pl. 1.
1909. *Hæmatopinus (Polyplax) stephensi* Neumann, Arch. de Par., Vol. 13, pp. 525-526, f. 25.
1913. *Hæmatopinus (Polyplax) stephensi* Patton & Cragg, Med. Ent., pp. 550-551; pl. 68, f. 4-6.
- 18—*Polyplax villosa* Galli-Valerio. From *Microtus nivalis* (Europe).
1905. *Polyplax villosa* Galli-Valerio, Zool. Anz., Vol. 28, pp. 521-522.
1908. *Polyplax villosa* Dalla Torre, Gen. Ins., Anopl., p. 14.
- NOTE: Probably not a valid species.
- 19—*Polyplax werneri* (Glinkiewicz). From *Pachyuromys duprasi* (Egypt).
1907. *Eremophthirus werneri* Glinkiewicz, Sitzb. d. Kaiserl. Ak. d. Wissen. Wien. Math. Natur. Klasse, Vol. 116, pp. 381-383.
1910. *Hoplopleura ? werneri* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, p. 164.

Genus *Scipio* Cummings

Cummings, Bul. Ent. Res., Vol. 3, p. 393 (1913); Ferris Ann. Durban Mus., Vol. 2 (in press).

Antennæ not differing in the sexes. Middle and posterior legs subequal in size, large and with pointed claws. Anterior legs small and slender with slender claw and, arising close beside it, a curved, claw-like process. Abdomen large and soft, entirely without chitinized tergal and sternal plates except in the male, where these plates may be present as very narrow, transverse areas. Each segment with a single transverse row of spines. Pleurites present. Gonapods very short. Spiracles small. Male resembling female except for smaller size.

Recorded only from Octodontidæ (Rodentia).

Type of the genus, *Scipio aulacodi* (Neumann).

1—*Scipio aulacodi* (Neumann). Type from *Thryonomys swinderianus* (Africa). Also from *Thryonomys* sp. (Zululand, South Africa).

1911. *Hæmatopinus aulacodi* Neumann, Arch. de Par., Vol. 14, pp. 403-406, f. 5-7.

1913. *Scipio aulacodi* Cummings, Bul. Ent. Res., Vol. 3, p. 393.

1916. *Scipio aulacodi* Ferris, Ann. Durban Mus., Vol. 2 (in press).

2—*Scipio breviceps* Ferris. From *Thryonomys* sp. (Zululand, South Africa).

1916. *Scipio breviceps* Ferris, Ann. Durban Mus., Vol. 2 (in press).

Linognathinæ of Uncertain Position

1—*Hæmatopinus (Polyplax) præcisus* Neumann. From "gros Rats" (Abyssinia).

1901. *Hæmatopinus præcitus* (typographical error for *præcisus*) Neumann, Arch. de Par., Vol. 5, pp. 600-601.

1902. *Hæmatopinus præcisus* Neumann, Ibid., Vol. 6, p. 144, fig.

1908. *Polyplax ? præcisus* Dalla Torre, Gen. Ins., Anopl., p. 13.

1909. *Hæmatopinus (Polyplax) præcisus* Neumann, Arch. de Par., Vol. 13, pp. 523-524, f. 23.

NOTE: This seems to include the male of one species and the female of another; it is probable that they belong to different genera.

2—*Hæmatopinus (Linognathus) squamulatus* Neumann.
From unknown host (Dire-Daoua, Abyssinia).

1911. *Hæmatopinus (Linognathus) squamulatus* Neumann, Arch. de Par., Vol. 14, pp. 401-403; f. 1-4.

NOTE: This is neither *Hæmatopinus* nor *Linognathus*; it approaches *Scipio* in certain respects, but possibly represents an undescribed genus.

3—*Hæmodipsus parvus* Kellogg & Ferris. From *Lagidium peruanum* (Peru, South America).

1915. *Hæmodipsus parvus* Kellogg & Ferris, Anopl. and Mall. of N. Am. Mam., pp. 30-32, t. f. 12; pl. 2, f. 4; pl. 4, f. 6.

NOTE: This may possibly belong to *Eulinognathus*. The species was described from immature specimens.

Subfamily *Euhæmatopininæ*.

Enderlein, Zool. Anz., Vol. 28, pp. 136, 138 (1904); Dalla Torre, Gen. Ins. Anopl., p. 15 (1908).

Separated from the other subfamilies of the *Hæmatopinidæ* only because of the three-segmented antennæ.

Genus *Euhæmatopinus* Osborn

Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., p. 186 (1896); Enderlein, Zool. Anz., Vol. 28, pp. 136, 140 (1904); Dalla Torre, Gen. Ins., Anopl., p. 16 (1908); Kellogg & Ferris, Anopl. & Mall. of N. Am. Mam., pp. 46-47 (1915).

Anterior and middle legs of nearly same size; posterior legs much larger and heavier, with broad, heavy claw, and with a stalked, disk-shaped appendage on femur and tibia. No tergal and sternal plates. Pleural plates present.

Type of the genus, *Euhæmatopinus abnormis* Osborn.

1—*Euhæmatopinus abnormis* Osborn. From *Scalopus aquaticus* (Iowa, U. S. A.).

1896. *Euhæmatopinus abnormis* Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., p. 187.

1908. *Euhæmatopinus abnormis* Dalla Torre, Gen. Ins., Anopl., p. 16.

1915. *Euhæmatopinus abnormis* Kellogg & Ferris, Anopl. and Mall. of N. Am. Mam., pp. 47-48; t. f. 16; pl. 3, f. 3; pl. 5, f. 4, 9.

Genus *Hæmatopinoides* Osborn.

Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., p. 28 (1891); Bul. 5, n. s., p. 187 (1896); Enderlein, Zool. Anz., Vol. 28, pp. 136, 140 (1904); Dalla Torre, Gen. Ins., Anopl., p. 15 (1908); Kellogg & Ferris, Anopl. and Mall. of N. Am. Mam., p. 46 (1915).

Anterior and middle legs small, posterior legs much larger, without stalked, disk-shaped appendages on femur and tibia. Abdomen without chitinized tergal and sternal plates. Pleural plates present.

Type of the genus, *Hæmatopinoides squamosus* Osborn.

1—*Hæmatopinoides squamosus* Osborn. From *Geomys bur-sarius*. (Iowa, U. S. A.).

1891. *Hæmatopinoides squamosus* Osborn, Bul. 7, o. s., U. S. Dept. Agr., Div. Ent., p. 28, f. 16.
 1896. *Hæmatopinoides squamosus* Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., pp. 187-188, f. 110.
 1908. *Hæmatopinoides squamosus* Dalla Torre, Gen. Ins., Anopl., p. 15.
 1915. *Hæmatopinoides squamosus* Kellogg & Ferris, Anopl. and Mall. of N. Am. Mam., pp. 46-47.

Family *Echinophthiriidæ*

Echinophthiriidæ Enderlein, Zool. Anz., Vol. 28, pp. 136, 137 (1904); Ibid., Vol. 29, p. 661 (1906); Deut. Südpolar Exp., Vol. 10, pp. 505-506 (1909); Dalla Torre, Gen. Ins., Anopl., p. 17 (1908).

Lepidophthiriidæ (in part) Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, p. 177 (1910).

Antennæ four- or five-segmented. Legs with a thumb-like process opposing the claw, the anterior pair small with slender claw, the other pairs extremely large with blunt, heavy claws. Abdomen without pleural, tergal or sternal plates.

Thorax and abdomen thickly beset with spines or with spines and delicate scales. Occurring only on marine mammals.

Subfamily *Echinophthiriinae*

Enderlein, Deut. Südpolar Exp., Vol. 10, p. 506 (1909).

Antennæ four-segmented. Abdomen thickly beset with spines but without scales.

Genus *Echinophthirius* Giebel

Giebel, Zeitschrift f. ges. Naturw., Vol. 37, p. 177 (1871); Piaget, Les Ped., p. 656 (1880); Dalla Torre, Gen. Ins., Anopl., p. 17 (1908); Enderlein, Zool. Anz., Vol. 28, p. 137 (1904); Ibid., Vol. 29, p. 661 (1906); Deut. Südpolar Exp., Vol. 10, p. 507 (1909).

Antennæ four-segmented. Body without scales but thickly beset with stout spines.

From *Pinnipedia*. Type of the genus *Echinophthirius phocæ* (Lucas).

1—*Echinophthirius groenlandicus* (Becker). From *Phoca groenlandica* (Jan Mayen Island).

1886. *Echinophthirius groenlandicus* Becker, Osterreichische Polarforschung, Vol. 3, Ins. von Jan Mayen, p. 60; pl. 5, f. 1-1a.

1908. *Echinophthirius groenlandicus* Dalla Torre, Gen. Ins., Anopl., p. 17.

1909. *Echinophthirius groenlandicus* Enderlein, Deut. Südpolar Exp., Vol. 10, p. 507.

2—*Echinophthirius phocæ* (Lucas). Type from (?) *Phoca vitulina* (Europe). Also from *P. groenlandica*, *P. variegata* (Atlantic Ocean), "harbor seals" (Aquarium, New York City), and "see hunde" (Helgoland).

1834. *Pediculus phocæ* Lucas, Mag. Zool. Ins., p. 121; pl. 12, f. 1.

1842. *Hæmatopinus setosus* Denny, Mon. Anopl., p. 36.

1857. *Hæmatopinus annulatus* Schilling, Arch. f. Naturgesc., Vol. 23, p. 281.

1874. *Hæmatopinus setosus* Giebel, Ins. Epizoa, pp. 42-43.
1880. *Echinophthirius setosus* Piaget, Les Ped., pp. 656-658; pl. 54—, f. 1.
1896. *Echinophthirius setosus* Osborn, Bul. 5, n. s., U. S. Dept. Agr., Div. Ent., p. 188.
1904. *Echinophthirius phocæ* Enderlein, Zool. Anz., Vol. 28, p. 136.
1908. *Echinophthirius phocæ* Dalla Torre, Gen. Ins., Anopl., p. 17.
1909. *Echinophthirius phocæ* Enderlein, Deut. Südpolar Exp., Vol. 10, p. 507.
1910. *Echinophthirius phocæ* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, p. 176.
1913. *Echinophthirius phocæ* Evans, Proc. Roy. Phys. Soc., Edinburgh, Vol. 19, p. 95, fig.
- 3—*Echinophthirius sericeus* Meinert. From *Phoca* sp. (Greenland).
1896. *Echinophthirius sericeus* Meinert, Vedenskabelige Meddelelser, p. 177.
1908. *Echinophthirius sericeus* Dalla Torre, Gen. Ins., Anopl., p. 18.

Subfamily *Antarctophthiriinæ*

Enderlein, Deut. Südpolar Exp., Vol. 10, p. 506 (1909).

Antennæ four- or five-segmented. Thorax and abdomen beset with many stout spines and with delicate scales.

Genus *Antarctophthirus* Enderlein

Antarctophthirus Enderlein, Zool. Anz., Vol. 29, p. 661 (1906); Deut. Südpolar Exp., Vol. 10, p. 506 (1909); Dalla Torre, Gen. Ins., Anopl., p. 17 (1908); Kellogg & Ferris, Anopl. and Mall. of N. Am. Mam., p. 48 (1915).

Arctophthirus (in part) Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, p. 178-179 (1910).

Antennæ five-segmented. Anterior legs and claws much smaller than the others, which are extraordinarily large and stout. No sternal plate. No pleural plates. Abdomen and

thorax beset with a great number of short stout spines and with extremely delicate scales. Spiracles small.

From various marine Mammals.

Type of the genus, *Antarctophthirus ogmorhini* Enderlein.

- 1—*Antarctophthirus lobodontis* Enderlein. From *Lobodon carcinophagus*. (Booth Wandel Is).
 1909. *Antarctophthirus lobodontis* Enderlein, Deut. Südpolar Exp., Vol. 10, pt. 4, p. 476.
- 2—*Antarctophthirus michrochir* (Trouessart & Neumann). From *Phocarctos hookeri* (Auckland Island). Also from *Zalophus californianus* (California), (unpublished record).
 1888. *Echinophthirus michrochir* Trouessart & Neumann, Le Naturaliste, Vol. 10, p. 80.
 1908. *Echinophthirus michrochir* Dalla Torre, Gen. Ins., Anopl., p. 17.
 1909. *Antarctophthirus michrochir* Enderlein, Deut. Südpolar Exp., Vol. 10, pp. 511-512; f. 176, 177, 183, 184.
- 3—*Antarctophthirus monachus* Kellogg & Ferris. From "seal." Locality unknown.
 1915. *Antarctophthirus monachus* Kellogg & Ferris, Anopl. and Mall. of N. Am. Mam., pp. 49-51; t. f. 17a, 18; pl. 3, f. 4.
- 4—*Antarctophthirus ogmorhini* Enderlein. From *Ogmorhinus leptonyx*. (Victoria Land).
 1902. *Echinophthirus setosus* Rothschild, Rept. Sou. Cross Exp., p. 224.
 1906. *Antarctophthirus ogmorhini* Enderlein, Zool. Anz., Vol. 29, p. 662, f. 1-2.
 1907. *Antarctophthirus ogmorhini* (in part) Neumann, Exp. Antarc. Franc. Arth., p. 13.
 1908. *Antarctophthirus ogmorhini* Dalla Torre, Gen. Ins., Anopl., p. 17.
 1909. *Antarctophthirus ogmorhini* Enderlein, Deut. Südpolar Exp., Vol. 10, pp. 509-510, f. 174, 175, 181, 182.
- 5—*Antarctophthirus trichechi* (Boheman). Type from *Odobænus rosmarus* (Europe). Also from *Odobænus obsesus* (Pacific Ocean).

1866. *Hæmatopinus trichechi* Boheman, Oefversigt af K. Vetenskaps-Akad. Förhandlingar, Vol. 22, p. 577; pl. 35, f. 2.
1880. *Hæmatopinus trichechi* Piaget, Les Ped., p. 656.
1908. *Hæmatopinus trichechi* Dalla Torre, Gen. Ins., Anopl., p. 11.
1909. *Antarctophthirus trichechi* Neumann, Arch. de Par., Vol. 13, pp. 532-537, f. 30-31.
1909. *Antarctophthirus trichechi* Enderlein, Deut. Südpolar Exp., Vol. 10, pp. 502, 512-513; pl. 55-56.
1910. *Arctophthirus trichechi* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, pp. 178-180, f. 89-92.
1915. *Antarctophthirus trichechi* Kellogg & Ferris, Anopl. and Mall. of N. Am. Mam., p. 49, t. f. 17b; pl. 3, f. 1.

Genus *Lepidophthirus* Enderlein

Enderlein, Zool. Anz., Vol. 28, pp. 43, 137 (1904); Ibid., Vol. 29, p. 661 (1905); Dalla Torre, Gen. Ins., Anopl., p. 18 (1908); Enderlein, Deut. Südpolar Exp., Vol. 10, pp. 513-514 (1909).

Antennæ four-segmented. Spiracles present on both meso- and metathorax and on second to eighth abdominal segments. Anterior legs small, others very large. Thorax and abdomen beset with delicate scales and with many spines.

Type of the genus *Lepidophthirus macrorhini* Enderlein.

1—*Lepidophthirus macrorhini* Enderlein. From *Macrorhinus leoninus* (Kerguelen Island).

1904. *Lepidophthirus macrorhini* Enderlein, Zool. Anz., Vol. 28, pp. 46-47, f. 1-5.
1908. *Lepidophthirus macrorhini* Dalla Torre, Gen. Ins., Anopl., p. 18.
1909. *Lepidophthirus macrorhini* Enderlein, Deut. Südpolar Exp., Vol. 10, pp. 515-516, f. 178-180, t. f. OO, QQ.

Family *Hæmatomyzidæ*

Enderlein, Zool. Anz., Vol. 28, pp. 136, 137 (1904); Dalla Torre, Gen. Ins., Anopl., p. 19 (1908).

Head much produced anteriorly with the mouth opening at the apex. Antennæ five-segmented. Legs long and slender, of nearly equal size, without a thumb-like process opposing the claw.

Genus *Hæmatomyzus* Piaget

Hæmatomyzus Piaget, Tijds. v. Ent., Vol. 12, p. 254 (1869); Günther, Science Gossip, p. 278 (1871); Piaget, Les Ped., p. 658 (1880); Enderlein, Zool. Anz., Vol. 28, p. 137 (1904); Dalla Torre, Gen. Ins., Anopl., p. 19 (1908).

Idolocoris Walker & Richter, Science Gossip, pp. 131, 211 (1871).

Phantasmocoris White, Science Gossip, pp. 234, 278 (1871).

Head tubularly produced anteriorly, with the mouth opening at the apex. Antennæ five-segmented. Legs long and slender, without a thumb-like process opposing the claw.

Type of the genus, *Hæmatomyzus elephantis* Piaget.

- 1—*Hæmatomyzus elephantis* Piaget. From African elephant.
- 1869. *Hæmatomyzus elephantis* Piaget, Tijds. v. Ent., Vol. 4, ser. 2, p. 254; pl. 2, f. 1-14.
 - 1871. *Idolocoris elephantis* Richter, Science Gossip, p. 132, f. 67.
 - 1871. *Hæmatomyzus elephantis* Newman, The Entomologist, Vol. 6, pp. 465-470, fig.
 - 1880. *Hæmatomyzus proboscideus* Piaget, Les Ped., pp. 658-660; pl. 54, f. 2.
 - 1908. *Hæmatomyzus elephantis* Dalla Torre, Gen. Ins., Anopl., p. 19.
 - 1910. *Hæmatomyzus proboscideus* Mjöberg, Ark. f. Zool., Vol. 6, pt. 13, pp. 181-183, f. 93.
- 1a—*Hæmatomyzus elephantis* var. *sumatranus* Fahrenholz. From *Elephas indicus* (Sumatra).
- 1910. *Hæmatomyzus elephantis* var. *sumatranus* Fahrenholz, Zool. Anz., Vol. 35, p. 714.
 - 1910. *Hæmatomyzus elephantis* var. *sumatranus* Fahrenholz, Jahresb. d. Niedersäch. Zool. Ver., Vol. 58-59, Abt. D, p. 67.

HOST LIST OF THE ANOPLURA

The arrangement of the orders is that adopted by Osborn in "The Age of Mammals" (1914). In each case the first name given is the correct name, as nearly as it has been possible to establish it. The names in parentheses are synonyms that have been used in connection with discussions of the Anoplura.

Order INSECTIVORA

Family TALPIDÆ

Scalopus aquaticus machrinus? (Scalops argentatus).
Euhæmatopinus abnormis Osborn (Ames, Iowa, U. S. A.).

Family SORICIDÆ

Sorex araneus (Sorex vulgaris).
Polyplax reclinatus (Burm.) (Europe).
?Hoplopleura acanthopus (Burm.) (Europe).

Order CARNIVORA

Suborder FISSIPEDIA

Family CANIDÆ

Canis familiaris (Domestic dog).
Linognathus piliferus (Burm.) (Cosmopolitan).

Family MUSTELIDÆ

"Ferret."
Linognathus piliferus (Burm.) (England).

Suborder PINNIPEDIA

Family ODOBÆNIDÆ

Odobænus rosmarus (Trichechus rosmarus, Walrus).
Antarctophthirus trichechi (Boh.) (North Atlantic).
Odobænus obesus (Pacific Walrus).
Antarctophthirus trichechi (Boh.) (North Pacific).

Family PHOCIDÆ

Phoca groenlandica.

Echinophthirius groenlandica (Becker) (Jan Mayen Island).

Phoca variegata.

Echinophthirius phocæ (Lucas) (Europe).

Phoca vitulina.

Echinophthirius phocæ (Lucas) (Europe).

Phoca sp.

Echinophthirius sericeus Meinert (Greenland).

Macrorhinus leoninus.

Lepidophthirus macrorhini End. (Victorialand).

Lobodon carcinophaga.

Antarctophthirus lobodontis End. (Booth Wandel Is.).

Ogmorhinus leptonyx.

Antarctophthirus ogmorhini End. (Kerguelen Is.).

Family OTARIIDÆ

Phocarctos hookeri.

Antarctophthirus microchir (Troues. & Neum.) (Auckland Is.).

Zalophus californianus.

Antarctophthirus microchir (Troues. & Neum.) (California).

Of Uncertain Position

"Harbor Seal."

Echinophthirius phocæ (Lucas) (Aquarium, New York City).

"Seal."

Antarctophthirus monachus Kellogg & Ferris (Locality unknown).

"Seehunde."

Echinophthirius phocæ (Lucas) (Helgoland).

Order RODENTIA

Suborder DUPLICIDENTATA

Family LEPORIDÆ

Lepus californicus.

Hæmodipsus ventricosus (Denny) (California, U. S. A.).

Lepus californicus deserticola.

Hæmodipsus ventricosus (Denny) (Ehrenberg, Arizona, U. S. A.).

Lepus campestris (Prairie Hare).

Hæmodipsus ventricosus (Denny) (Ames, Iowa, U. S. A.).

Lepus europæus occidentalis (*Lepus europæus*).

Hæmodipsus lyriocephalus (Burm.) (Tynninghame, Scotland).

Lepus timidus.

Hæmodipsus ventricosus (Denny) (Europe).

Hæmodipsus lyriocephalus (Burm.) (Europe).

Oryctolagus cuniculus (Kaninchen, *Lepus cuniculus*).

Hæmodipsus ventricosus (Denny) (Europe).

"Domestic rabbit."

Hæmodipsus ventricosus (Denny) (Europe, North America).

Suborder SIMPLICIDENTATA

Family SCIURIDÆ

Subfamily ARCTOMYINÆ

Anmospermophilus nelsoni.

Enderleinellus suturalis (Osborn) (Bakersfield, California, U. S. A.).

Callospermophilus chrysodeirus.

Enderleinellus suturalis var. *occidentalis* K. & F. (South Yolla Bolly Mt. and Yosemite Valley, California, U. S. A.).

Citellus barrowensis ? (*Spermophilus* sp.).

Linognathoides montanus (Osborn) (Pt. Barrow, Alaska).

Citellus beecheyi beecheyi (*Citellus beecheyi douglasi*).

Linognathoides montanus (Osborn) (Palo Alto, California, U. S. A.).

Enderleinellus osborni K. & F. (Palo Alto, California, U. S. A.).

Citellus beldingi.

Enderleinellus suturalis (Osborn) (Yosemite Nat. Park, California, U. S. A.).

Linognathoides montanus (Osborn) (California, U. S. A.).

- Citellus columbianus* (*Spermophilus columbianus*).
 Linognathoides montanus (Osborn) (Pullman, Washington, U. S. A.).
- Citellus douglasi* (*Citellus beecheyi douglasi*).
 Enderleinellus osborni K. & F. (Cazadero, California, U. S. A.).
 Linognathoides montanus (Osborn) (Cazadero, California, U. S. A.).
- Citellus eversmanni* (*Spermophilus eversmanni*).
 Linognathoides laeviusculus (Grube) (Jakutsk, Siberia; Pitlekaj).
- Citellus franklini* (*Spermophilus franklini*).
 Enderleinellus suturalis (Osborn) (Ames, Iowa, U. S. A.).
- Citellus grammurus*.
 Linognathoides montanus (Osborn) (Santa Catalina Mts., Arizona, U. S. A.).
- Citellus leptodactylus*.
 Linognathoides citelli Cum. (Transcaspia).
- Citellus mexicanus* ?
 Linognathoides montanus (Osborn) (Guanajuato, Mexico).
- Citellus mollis*.
 Enderleinellus suturalis (Osborn) (Virginia Valley, Nevada, U. S. A.).
- Citellus oregonus*.
 Enderleinellus suturalis (Osborn) (Pine Forest Mts., Nevada, U. S. A.).
 Linognathoides montanus (Osborn).
- Citellus plesius ablusus*.
 Linognathoides montanus (Osborn) (Prince William Sound, Alaska).
- Citellus townsendi*.
 Enderleinellus suturalis (Osborn) (Wallula, Washington, U. S. A.).
- Citellus tridecemlineatus* (*Spermophilus tridecemlineatus*).
 Enderleinellus suturalis (Osborn) (Ames, Iowa, U. S. A.).
- Citellus* sp. ? ("Rock Squirrel").
 Linognathoides montanus (Osborn) (Boulder, Colorado, U. S. A.).

- Citellus* sp. ? ("Western Gray Squirrel").
Linognathoides montanus (Osborn) (Ft. Collins, Colorado, U. S. A.).
- Cynomys gunnisoni*.
Enderleinellus suturalis (Osborn) (Florissant, Colorado, U. S. A.).
- Cynomys leucurus*.
Enderleinellus suturalis (Osborn) (Routt County, Colorado, U. S. A.).
- Marmota flaviventris sierræ*.
Linognathoides montanus (Osborn) (California, U. S. A.).
- Marmota flaviventris* ssp. ?
Linognathoides montanus (Osborn) (Burns, Oregon, U. S. A.).
- Marmota pruinosa*.
Linognathoides sp. (North America).
- Xerospermophilus tereticaudus*.
Enderleinellus suturalis (Osborn) (Imperial County, California, U. S. A.).

Subfamily SCIURINÆ

- Sciurus arizonensis huachuca*.
Enderleinellus longiceps K. & F. (Huachuca Mts., Arizona, U. S. A.).
- Sciurus douglasi albolimbatus*.
Enderleinellus sphærocephalus (Nitzsch) (Yosemite Nat. Park, California, U. S. A.).
Hoplopleura arboricola K. & F. (Yosemite Nat. Park, California, U. S. A.).
Neohæmatopinus antennatus var. *semifasciatus* Ferris (Yosemite Nat. Park, California, U. S. A.).
- Sciurus douglasi mollipilosus*.
Hoplopleura arboricola K. & F. (Cazadero, California, U. S. A.).
Neohæmatopinus antennatus var. *semifasciatus* Ferris (Cazadero, California, U. S. A.).

Sciurus griseus griseus.

Enderleinellus kelloggi Ferris (Mariposa County, California, U. S. A.).

Hoplopleura arboricola K. & F. (Mariposa County, California, U. S. A.).

Neohæmatopinus antennatus (Osborn) (Mariposa County, California, U. S. A.).

Sciurus griseus nigripes.

Enderleinellus kelloggi Ferris (Stanford University, California, U. S. A.).

Hoplopleura arboricola K. & F. (Stanford University, California, U. S. A.).

Sciurus hudsonicus petulans.

Enderleinellus sphærocephalus (Burm.) (Glacier Bay, Alaska).

Sciurus hudsonicus vancouverensis.

Enderleinellus sphærocephalus (Burm.) (Kuiu Island, Alaska).

Sciurus niger rufiventer (*Sciurus cinereus ludovicianus*).

Enderleinellus longiceps K. & F. (De Kalb County, Indiana, U. S. A.).

Neohæmatopinus antennatus (Osborn) (Ames, Iowa, U. S. A.).

Sciurus palmarum.

Hoplopleura maniculata (Neum.) (Rajkote, India).

Neohæmatopinus echinatus (Neum.) (Rajkote, India).

Sciurus vulgaris.

Enderleinellus sphærocephalus (Burm.) (Europe).

Sciurus niger ? (*Sciurus vulpinus*).

Neohæmatopinus sciurinus (Mjöberg) (Zool. Mus. Hamburg).

Sciurus niger rufiventer or *S. carolinensis carolinensis* ("Western Gray Squirrel").

Enderleinellus longiceps K. & F. (Lincoln, Nebraska, U. S. A.).

Tamias striatus.

Hoplopleura arboricola K. & F. (Ames, Iowa, U. S. A.).

Hoplopleura erratica (Osborn) (= *H. arboricola* K. & F. ?) (Iowa, U. S. A.).

Eutamias alpinus.

Neohæmatopinus pacificus K. & F. (Yosemite Nat. Park, California, U. S. A.).

Hoplopleura arboricola K. & F. (Yosemite Nat. Park, California, U. S. A.).

Eutamias hindsii.

Neohæmatopinus pacificus K. & F. (Marin County, California, U. S. A.).

Eutamias merriami pricei

Hoplopleura arboricola K. & F. (Stanford University, California, U. S. A.).

Eutamias speciosus frater.

Hoplopleura arboricola K. & F. (Yosemite Nat. Park, California, U. S. A.).

Neohæmatopinus pacificus K. & F. (Yosemite Nat. Park, California, U. S. A.).

Eutamias sonomæ.

Neohæmatopinus pacificus K. & F. (Cazadero, Sonoma County, and Sanhedrin Mt., Mendocino County, California, U. S. A.).

Hoplopleura arboricola K. & F. (Cazadero, Sonoma County, and Sanhedrin Mt., Mendocino County, California, U. S. A.).

Eutamias townsendi ochrogenys.

Hoplopleura arboricola K. & F. (Freestone and Cazadero, Sonoma County, California, U. S. A.).

Neohæmatopinus pacificus K. & F. (Freestone and Cazadero, Sonoma County, California, U. S. A.).

Heliosciurus palliatus.

Neohæmatopinus heliosciuri Cumm. (Uchweni Forest, Witu, British East Africa).

Subfamily XERINÆ

Xerus getulus.

Linognathoides pectinifer (Neum.) (Northern Africa).

Family PETAURISTIDÆ

Glaucomys sabrinus ssp. (*Sciuropterus* sp.)

Hoplopleura trispinosa K. & F. (Eureka, California, and Brownsville, Oregon, U. S. A.).

Glaucomyx sabrinus lascivus.

Enderleinellus uncinatus Ferris (Yosemite Nat. Park, California, U. S. A.).

Hoplopleura trispinosa K. & F. (Yosemite Nat. Park, California, U. S. A.).

Neohæmatopinus sciuropteri (Osborn) (Yosemite Nat. Park, California, U. S. A.).

Glaucomyx volans (*Sciuropterus volucella*, *Pteromys volucella*)

Hoplopleura trispinosa K. & F. (Kensington, Maryland, U. S. A.).

Hoplopleura erratica (Osborn) (= *H. trispinosa* K. & F.?) (Iowa, U. S. A.).

Neohæmatopinus sciuropteri (Osborn) (Iowa, U. S. A.).

Family HETEROMYIDÆ

Dipodomys deserti.

Fahrenholzia pinnata K. & F. (Mecca, Riverside County, California, U. S. A.).

Dipodomys californicus.

Fahrenholzia pinnata K. & F. (Covel, California, U. S. A.).

Dipodomys merriami.

Fahrenholzia pinnata K. & F. (Inyo County, California, U. S. A.).

Microdipodops polionotus.

Fahrenholzia pinnata K. & F. (Benton, Mono County, California, U. S. A.).

Perognathus californicus.

Fahrenholzia tribulosa Ferris (Mariposa County, California, U. S. A.).

Perognathus formosus.

Fahrenholzia tribulosa Ferris (Victorville, California, U. S. A.).

Perognathus parvus olivaceus.

Fahrenholzia pinnata K. & F. (Pine Forest Mts., Nevada, U. S. A.).

Perodipus sp.

Fahrenholzia pinnata K. & F. (Coulterville, Mariposa County, California, U. S. A.)

Family GEOMYIDÆ

Geomys bursarius.

Hæmatopinoïdes squamosus Osborn (Ames, Iowa, U. S. A.).

Family MUSCARDINIDÆ

Dryomys nitedula (*Myoxus nitella*).

Polyplax pleurophæa (Burm.) (Europe).

Family MURIDÆ

Subfamily MURINÆ

Cricetulus phæus.

Linognathoides citelli Cumm. (Transcaspia).

NOTE: *Cricetulus* is probably not the normal host of this species.

Mus musculus.

Polyplax serrata (Burm.) (Europe).

Hoplopleura acanthopus (Burm.) (Europe).

Hoplopleura hesperomydis (Osborn) (California, U. S. A.).

Mus chrysophilus.

Polyplax gracilis Fahr. (Mfongösi, Zululand, South Africa).

Mus coucha.

Hoplopleura intermedia K. & F. (Mfongosi, Zululand, South Africa).

Mus barbarus.

Polyplax ? *spiculifera* (Gerv.) (Algiers).

Apodemus agrarius (*Mus agrarius*).

Polyplax affinis (Burm.) (Europe).

Apodemus sylvaticus (*Mus sylvaticus*).

Polyplax affinis (Burm.) (Europe).

Polyplax spinulosa (Burm.) (Europe).

Micromys minutus (*Mus minutus*).

Hoplopleura longula (Neum.).

Polyplax gracilis Fahr. (Europe).

Epimys norvegicus (*Mus norvegicus*, *Mus decumanus*, *Wanderratte*).

Polyplax spinulosa (Burm.) (Cosmopolitan).

- Epimys rattus* (*Mus rattus*).
 Polyplax spinulosa (Burm.) (Cosmopolitan).
 Hoplopleura bidentata (Neum.) (Lake Torrens, Australia).
Epimys rattus alexandrinus (*Mus alexandrinus*).
 Polyplax spinulosa (Burm.).
Epimys surifer.
 Polyplax pectinata Cumm. (Biserat, Jalor, Malay Peninsula).
Acomys caharinus.
 Polyplax brachyrrhynchus Cumm. (Assiut, Egypt).
 Polyplax oxyrrhynchus Cumm. (Assiut, Egypt).
Arvicanthis dorsalis.
 Hoplopleura enormis K. & F. (Mfongosi, Zululand, South Africa).
Dasymys incomtus Ferris.
 Polyplax cummingsi Ferris (Mfongosi, Zululand, South Africa).
Saccostomus campestris.
 Polyplax jonesi K. & F. (Mfongosi, Zululand, South Africa).

Subfamily GERBILLINÆ

- Gerbillus indicus*.
 Polyplax stephensi (Christ. & News.) (India).
Meriones sp.
 Polyplax ? *clavicornis* (Nitzsch) (Abyssinia).
Pachyuromys duprasi.
 Polyplax weneri (Glink.) (Natrontal, Egypt).

Subfamily OTOMYINÆ

- Otomys brantsi luteolus*.
 Polyplax otomydis Cumm. (South African Museum, Cape Town).
Otomys irroratus.
 Polyplax otomydis Cumm. (Mfongosi, Zululand, South Africa).
Otomys irroratus tropicalis.
 Polyplax otomydis Cumm. (Mt. Kenya, British East Africa).

Subfamily MICROTINÆ

- Arvicola amphibius* (*Paludicola amphibius*).
 Polyplax spiniger (Burm.) (Europe).
Dicrostonyx torquatus (*Lemmus torquatus*).
 Hoplopleura acanthopus (Burm.) (Pitlekaj).
Lemmus obensis.
 Hoplopleura hispida (Grube) (Jakutsk, Siberia).
Microtus agrestis.
 Hoplopleura acanthopus (Burm.) (Europe).
Microtus arvalis.
 Hoplopleura acanthopus (Burm.) (Europe).
Microtus californicus.
 Polyplax spinulosa (Burm.).
 Hoplopleura acanthopus var. *americanus* K. & F.
Microtus mordax.
 Polyplax spinulosa (Burm.) (Tuolumne Meadows, California, U. S. A.).
Microtus nivalis.
 Polyplax villosa Galli-Valerio (Switzerland).
Microtus (*Lagurus*) *intermedius*.
 Hoplopleura acanthopus var. *americanus* K. & F.
 Polyplax spinulosa (Burm.) (Pine Forest Mts., Nevada, U. S. A.).
Microtus pennsylvanicus (*Arvicola pennsylvanica*).
 Hoplopleura erratica (Osborn).
Microtus sp. (*Arvicola* sp.).
 Hoplopleura acanthopus var. *americanus* K. & F. (Ames, Iowa, U. S. A.).
Phenacomys longicaudus (*Phenacomys* sp.).
 Polyplax spinulosa (Burm.) (Mendocino City, California, U. S. A.).

Subfamily CRICETINÆ

- Holochilus squamipes*. (This is possibly *Nectomys apicalis*).
 Hoplopleura quadridentata (Neum.) (Peru, South America).
Neotoma cinerea cinerea.
 Linognathoides inornatus K. & F. (Yosemite Nat. Park, California, U. S. A.).

Neotoma cinerea occidentalis.

Linognathoides inornatus K. & F. (South Yolla Bolly Mt., Tehama County, California, U. S. A.).

Neotoma fuscipes streatori.

?*Linognathoides inornatus* K. & F. (Yosemite Nat. Park, California, U. S. A.).

Nesoryzomys indefessus.

Hoplopleura quadridentata (Neum.) (Galapagos Is.).

Nesoryzomys narboroughi.

Hoplopleura quadridentata (Neum.) (Galapagos Is.).

Peromyscus boylei.

Hoplopleura hesperomydis (Osborn) (Lakeport, Lake County, California, U. S. A.).

Peromyscus maniculatus rubidus.

Hoplopleura hesperomydis (Osborn).

Polyplax auricularis K. & F. (Marin County, California, U. S. A.).

Peromyscus maniculatus gambeli.

Hoplopleura hesperomydis (Osborn).

Polyplax auricularis K. & F. (Yosemite Nat. Park, California, U. S. A.).

Peromyscus sitchensis prevostensis.

Polyplax auricularis K. & F. (Forrester Is., Alaska).

Onychomys leucogaster arcticeps.

Hoplopleura hesperomydis (Osborn) (Colorado Springs, Colorado, U. S. A.).

Polyplax auricularis K. & F. (Colorado Springs, Colorado, U. S. A.).

Onychomys torridus pulcher.

Hoplopleura hesperomydis (Osborn) (Victorville, California, U. S. A.).

Polyplax auricularis K. & F. (Victorville, California, U. S. A.).

Sigmodon hispidus.

Hoplopleura hirsuta Ferris (Raleigh, North Carolina, U. S. A.).

Sigmodon hispidus texianus.

Hoplopleura hirsuta Ferris (Lakeport, Texas, U. S. A.).

Sigmodon hispidus eremicus.

Hoplopleura hispidus Ferris (Sacaton, Arizona, U. S. A.).

Muridæ of Uncertain Position

“Einer kleinen ratte mit sehr dicken, stachelartigen Haaren.”

Polyplax miacantha Speiser (Salomona, Abyssinia).

“Gros Rats.”

Polyplax ? *præcis*a Neumann (Abyssinia).

Family DIPODIDÆ

Dipus sp.

Eulinognathus aculeatus (Neum.) (Tunis).

Family PEDETIDÆ

Pedetes caffer.

Eulinognathus denticulatus Cumm. (South Africa).

Family OCTODONTIDÆ

Thryonomys swinderianus (*Aulacodus swinderianus*).

Scipio aulacodi (Neum.) (Dahomey; Luangwa Valley, Northeastern Rhodesia, Africa).

Thryonomys sp.

Scipio aulacodi (Neum.) (Mfongosi, Zululand, South Africa).

Scipio breviceps Ferris (Mfongosi, Zululand, South Africa).

Family CHINCHILLIDÆ

Lagidium peruanum.

Hæmodipsus ? *parvus* Kellogg & Ferris (Peru, South America).

Order TUBULIDENTATA

Family ORYCTEROPODIDÆ

Orycteropus afer.

Hobophthirus notophallus (Neum.) (South Africa).

Order PRIMATES

Family LASIOPYGIDÆ

- Lasiopyga mona* (*Cercopithecus mona*).
Pedicinus breviceps Piaget.
Pithecus albibarbatus (*Macacus silenus*).
Pedicinus breviceps Piaget (Zool. Mus. Hamburg).
Pedicinus paralleliceps Mjöberg (Zool. Mus. Hamburg).
Pithecus brevicaudus or *P. rhesus* (*Macacus erythræus*).
Phthirpedicinus piageti (Stroebelt).
Pithecus nemestrinus (*Inuus nemestrinus*).
Pedicinus eurygaster Gerv.
Pithecus rhesus (*Macacus rhesus*).
Pedicinus rhesi Fahr.
Phthirpedicinus micropilosus Fahr.
Pithecus sinicus (*Inuus sinicus*).
Phthirpedicinus microps (Nitzsch).
Pithecus irus (*Cercopithecus cynomolgus*).
Pedicinus longiceps Piaget.
Pithecus fascicularis (*Macacus cynomolgus*).
Pedicinus eurygaster Burm.
Pygathrix cristata (*Semnopithecus prunosus*).
Pedicinus longiceps Piaget.
Pygathrix aurata (*Trachypithecus maurus*).
Hæmatopinus (*Pedicinus* or *Phthirpedicinus*) ? *obtusus*
 Rudow.
Simia sylvanus (*Inuus sylvanus*).
Hæmatopinus (*Pedicinus* or *Phthirpedicinus*) ? *albidus*
 Rudow.

Family CEBIDÆ

- Ateles ater* (*Ateles ater*).
Pediculus capitis De Geer.
Ateles paniscus (*Ateles pentadactylus*).
Pediculus consobrinus Piaget.
Cebus fatuellus.
Pediculus capitis (De Geer) (Rio de Janeiro, South America).
Cebus sp.
Pediculus capitis (De Geer).

Ateleus pan (*Ateles rellerosus*).
Pediculus lobatus Fahr. (Berlin Mus.).

Family HYLOBATIDÆ

Hylobates concolor (*Hylobates mülleri*).
Pediculus oblongus Fahr.
Symphalangus syndactylus (*Hylobates syndactylus*).
Pediculus oblongus Fahr.

Family PONGIDÆ

Pan sp. (*Simia troglodytes*).
Pediculus schäffi Fahr.

Family HOMINIDÆ

Homo sapiens.
Pediculus capitis De Geer.
Pediculus corporis De Geer.
Phthirus pubis Linnæus.

Primates of Uncertain Position

Cercopithecus sp.
Pedicinus breviceps Piaget (Zool. Mus. Hamburg).
Ateles ape?
Pediculus mjöbergi K. & F. (Traveling menagerie, Europe).
Hamadryas sp. (perhaps a *Papio*).
Pedicinus hamadryas.
 Host entirely unknown but undoubtedly a Primate.
Pedicinus ? *graciliceps* Piaget.

Order ARTIODACTYLA

Family SUIDÆ

Phachochoerus æthiopicus.
Hæmatopinus phachochoeri End. (Nyasa Land, Africa).
Phachochoerus oeliani massaicus.
Hæmatopinus phachochoeri End. (Africa).

Phachochoerus sp.

Hæmatopinus phachochoeri End. (Africa).

Potomochoerus affinis nyasæ.

Hæmatopinus phachochoeri End. (German East Africa).

Potomachoerus africanus.

Hæmatopinus phachochoeri End. (Africa).

Potomachoerus choerapotamus.

Hæmatopinus phachochoeri End. (Zululand, South Africa).

Sus scrofa domestica.

Hæmatopinus suis L. (Cosmopolitan).

Sus vittatus.

Hæmatopinus suis adventicius Neum. (East Indies).

Family CAMELIDÆ

Auchenia huanaca (Llama).

Linognathus prælongiceps (Neum.) (South America).

Camelus dromedarius.

Hæmatopinus tuberculatus (Burm.) (Australia, imported from India).

Camelus bactrianus.

Hæmatopinus tuberculatus (Burm.)

African camels.

Hæmatopinus tuberculatus (Burm.) (Cairo, Egypt).

Family GIRAFFIDÆ

Camelopardalis giraffa.

Linognathus brevicornis (Giebel) (Africa).

Family CERVIDÆ

Cervus elaphus.

Cervophthirus crassicornis (Nitzsch) (Europe).

Cervus unicolor.

Hæmatopinus longus Neum. (Nepaul, India).

Odocoileus columbianus.

Cervophthirus crassicornis (Nitzsch) (Laytonville, California, U. S. A.).

Rangifer tarandus.

Cervophthirus tarandi Mjög. (Sweden).

Cearrus-Hirsch.

? Linognathus breviceps (Piaget) (Guatemala).

Family BOVIDÆ

Subfamily CEPHALOPHINÆ

Cephalophus maxwelli.

Linognathus breviceps (Piaget).

Cephalophus natalensis.

Linognathus angulatus (Piaget) (Mfongosi, Zululand, S. Africa).

Cephalophus nigrifrons.

Linognathus angulatus (Piaget).

Cephalophus sp.

Linognathus angulatus (Piaget) (Zool. Mus. Hamburg).

Subfamily CERVICAPRINÆ

Cervicapra arundinum.

Linognathus fahrenheitzi Paine (Nyassa Land, Africa).

Cervicapra fulvorufula.

Linognathus fahrenheitzi Paine (Mfongosi, Zululand, South Africa).

Subfamily ANTILOPINÆ

Antilope cervicapra.

Linognathus tibialis var. *cervicapræ* (Lucas).

Antilope euchore.

Linognathus tibialis var. *euchore* Wat. (South African Museum, Cape Town).

Antilope maori.

Linognathus tibialis (Piaget) (Zoological Garden, Rotterdam).

Antilope rupicapræ.

Linognathus stenopsis (Burin.).

Antilope sp.

Linognathus tibialis var. *antennatus* (Piaget).

Gazella subgutturosa (*Antilope subgutturosa*).

Linognathus tibialis var. *appendiculatus* (Piaget) (Zoological Garden, Rotterdam).

Gazelle.

Linognathus gazella Mjöberg (Zool. Mus. Hamburg).

Subfamily TRAGELAPHINÆ

Taurotragus oryx.

Hæmatopinus taurotragi Cumm. (Menagerie in England).

Limnotragus gratus.

Linognathus limnotragi Cumm. (Zool. Garden, London, from Congo).

Subfamily RUPICAPRINÆ

Rupicapra rupicapra (Gemse).

Linognathus rupicapræ (Rudow) (Europe).

Subfamily CAPRINÆ

Capra ibex.

Linognathus forficulus (Rudow) (Europe).

Capra ægyptica (Name does not appear in any lists, is possibly *C. ægagrus*).

Linognathus stenopsis (Burm.).

Capra hircus.

Linognathus stenopsis (Burm.).

"Mexican Goat."

Linognathus stenopsis (Burm.) (San Diego, California, U. S. A.).

Ovis aries.

Linognathus ovillus (Neum.) (Scotland and New Zealand).

Linognathus pedalis (Osborn) (Minnesota, Iowa, Nevada, U. S. A.).

Sheep.

Linognathus stenopsis (Burm.) (Abeokuta, Southern Nigeria, Africa).

Subfamily BOVINÆ

Bos taurus.

Hæmatopinus eurysternus (Nitzsch) (Cosmopolitan).

Linognathus vituli (L.) (Cosmopolitan).

Bos grunniens.

Hæmatopinus punctatus Rudow.

Bos caffer (*Buffelus caffer*).

Hæmatopinus bufali (De Geer) (Africa).

Bison bison.

Hæmatopinus tuberculatus (Burm.) (North America).

"Common Buffalo."

Hæmatopinus tuberculatus (Burm.) (Vienna).

"Buffalo of India, Tonkin, Sumatra and Rumania."

Hæmatopinus tuberculatus (Burm.).

Order PERISSODACTYLA

Equus caballus (Domestic horse).

Hæmatopinus asini (L.) (Cosmopolitan).

Equus asinus (Ass).

Hæmatopinus asini (L.).

Equus burchelli.

Hæmatopinus asini (L.) (South Africa).

Order PROBOSCIDEA

Family ELEPHANTIDÆ

Elephas indicus.

Hæmatomyzus elephantis var. *sumatranus* Fahr. (Sumatra).

Loxodonta africana (*Elephas africanus*).

Hæmatomyzus elephantis Piaget.

Order HYRACOIDEA

Family PROCAVIIDÆ

Procavia capensis (*Hyrax capensis*).

Linognathus caviæ-capensis (Pallas) (South Africa).

Procavia syriaca (*Hyrax syriacus*).

Linognathus leptocephalus (Ehrenb.) (Syria).

Host Unknown

Hæmatopinus (*Linognathus*) ? *squamulatus* Neum. (Diri-Daoua, Abyssinia).

APPENDIX

Since the preceding pages were sent to press the author has received from Mr. Bruce Cummings, of the British Museum, and Mr. James Waterston, of the Imperial Bureau of Entomology, certain notes which are here appended. To both these gentlemen thanks are due.

The addition of these notes makes the Catalogue complete to April 1, 1916.

Linognathus microcephalus (Garnett). From domestic sheep (New Zealand).

NOTE: "This is in my opinion the same as *Linognathus pedalis* (Osb.)" (Waterston).

1915. *Hæmatopinus microcephalus* Garnett, Jour. Comp. Pathology and Therapeutics, pp. 2-3, 3 figs.

Linognathus pithodes Cummings. From *Antilope cervicapra* (Zool. Garden, London).

1916. *Linognathus pithodes* Cummings, Proc. Zool. Soc., London (March, 1916).

Hoplopleura pectinata (Cummings).

NOTE: "*Polyplax pectinata* Cum., is a *Hoplopleura*" (Cummings).

Echinophthirius horridus (Olfers).

1816. *Pediculus horridus* Olfers, De Vegetativis et Animalis.

NOTE: "*Echinophthirius phocæ* Lucas, equals *E. horridus* (Olfers)" (Cummings).

Hoplopleura bidentata (Neum.). From *Hydromys chryso-gaster*; not from *Epimys rattus* (Harrison).

Linognathus setosus (Olfers).

1816. *Pediculus setosus* Olfers, De Vegetativis et Animalis.

NOTE: "*Linognathus piliferus* (Burm.) equals *Pediculus setosus* Olfers" (Harrison).

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